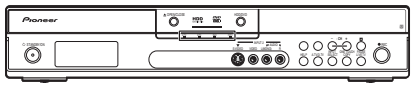
Pioneer sound.vision.soul

Service Manual



DVR-540HX-S

ORDER NO.
RRV3396

DVD RECORDER

DVR-540HX-S
DVR-440HX-S

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Model	Type	Power Requirement	Region No.	Serial No. Please confirm 3rd & 4th alphabetical letters.
DVR-540HX-S	WYXK5	AC 220 V to 240 V	2	&&UK######$$
DVR-540HX-S	WVXK/5	AC 220 V to 240 V	2	&&UK######$$
DVR-440HX-S	WVXK5	AC 220 V to 240 V	2	&&UK######$$

- **When servicing this model, some service procedures may reset the customer settings to the factory default settings. Make sure to explain this to the customer.**

An HDD (Hard Disc Drive) is mounted in this product.
The HDD is a precision instrument very vulnerable to shock and electrostatic charges. Please read "7.3 Cautions on Handling the HDD" in this manual and exercise sufficient caution when handling the HDD itself, as well as the product with the HDD built in.
When an HDD becomes defective and inoperable, restoration of the user's data recorded on the HDD, or copying of the user's recorded data to other media (such as a new HDD) is totally impossible. Before servicing, OBTAIN THE USER'S PRIOR CONSENT to that effect.
The user must be made aware that all recorded data are deleted if the HDD is intialized.

For details, refer to "Important Check Points for Good Servicing" .

PIONEER CORPORATION 4-1, Meguro 1-chome, Meguro-ku, Tokyo 153-8654, Japan
PIONEER ELECTRONICS (USA) INC. P.O. Box 1760, Long Beach, CA 90801-1760, U.S.A.
PIONEER EUROPE NV Haven 1087, Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS ASIACENTRE PTE. LTD. 253 Alexandra Road, #04-01, Singapore 159936
ⓒ**PIONEER CORPORATION 2006**

T-ZZV MAY 2006 printed in Japan

SAFETY INFORMATION

■ LABEL CHECK

IMPORTANT

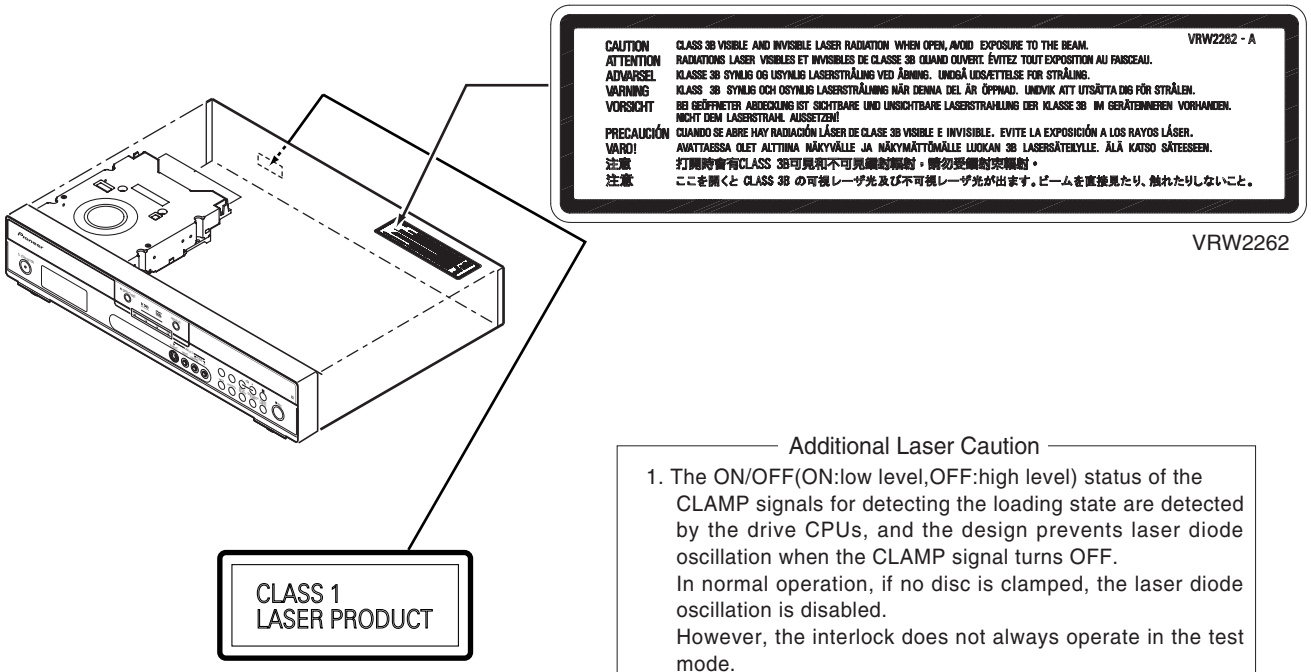
THIS PIONEER APPARATUS CONTAINS LASER OF CLASS 1.
SERVICING OPERATION OF THE APPARATUS SHOULD BE DONE BY A SPECIALLY INSTRUCTED PERSON.

LASER DIODE CHARACTERISTICS

MAXIMUM OUTPUT POWER: 100 mW
WAVELENGTH: 654 - 662 nm

LASER DIODE CHARACTERISTICS

MAXIMUM OUTPUT POWER: 5 mW
WAVELENGTH: 770 - 810 nm


VRW2262 - A
CAUTION CLASS 3B VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN, AVOID EXPOSURE TO THE BEAM.
ATTENTION RADIATIONS LASER VISIBLES ET INVISIBLES DE CLASSE 3B QUAND OUVERT. ÉVITEZ TOUT EXPOSITION AU FAISCEAU.
ADVARSEL KLASSE 3B SYNLIG OG USYNLIG LASERSTRÅLING VED ÅBNING. UNDGÅ UDSÆTTELSE FOR STRÅLING.
VARNING KLASS 3B SYNLIG OCH OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD. UNDVIK ATT UTSÄTTA DIG FÖR STRÅLEN.
VORSICHT BEI GEÖFFNETER ABDECKUNG IST SICHTBARE UND UNSICHTBARE LASERSTRAHLUNG DER KLASSE 3B IM GERÄTEINNEREN VORHANDEN. NICHT DEM LASERSTRAHL AUSSETZEN!
PRECAUCIÓN CUANDO SE ABRE HAY RADIACIÓN LÁSER DE CLASE 3B VISIBLE E INVISIBLE. EVITE LA EXPOSICIÓN A LOS RAYOS LÁSER.
VARO! AVATTAESSA OLET ALTTIINA NÄKYVÄLLE JA NÄKYMÄTTÖMÄLLE LUOKAN 3B LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.
注意 打開時會有CLASS 3B可見和不可見鐳射輻射。開勿受鐳射束輻射。
注意 ここを開くと CLASS 3B の可視レーザ光及び不可視レーザ光が出ます。ビームを直接見たり、触れたりしないこと。

VRW2262

Additional Laser Caution

1. The ON/OFF(ON:low level,OFF:high level) status of the CLAMP signals for detecting the loading state are detected by the drive CPUs, and the design prevents laser diode oscillation when the CLAMP signal turns OFF.
   In normal operation, if no disc is clamped, the laser diode oscillation is disabled.
   However, the interlock does not always operate in the test mode.

2. When the cover is opened, close viewing of the objective lens with the naked eye will cause exposure to a Class 3A laser beam.

[Important Check Points for Good Servicing]

In this manual, procedures that must be performed during repairs are marked with the below symbol.
Please be sure to confirm and follow these procedures.

1. Product safety

Please conform to product regulations (such as safety and radiation regulations), and maintain a safe servicing environment by following the safety instructions described in this manual.

① Use specified parts for repair.

Use genuine parts. Be sure to use important parts for safety.

② Do not perform modifications without proper instructions.

Please follow the specified safety methods when modification(addition/change of parts) is required due to interferences such as radio/TV interference and foreign noise.

③ Make sure the soldering of repaired locations is properly performed.

When you solder while repairing, please be sure that there are no cold solder and other debris.
Soldering should be finished with the proper quantity. (Refer to the example)

④ Make sure the screws are tightly fastened.

Please be sure that all screws are fastened, and that there are no loose screws.

⑤ Make sure each connectors are correctly inserted.

Please be sure that all connectors are inserted, and that there are no imperfect insertion.

⑥ Make sure the wiring cables are set to their original state.

Please replace the wiring and cables to the original state after repairs.
In addition, be sure that there are no pinched wires, etc.

⑦ Make sure screws and soldering scraps do not remain inside the product.

Please check that neither solder debris nor screws remain inside the product.

⑧ There should be no semi-broken wires, scratches, melting, etc. on the coating of the power cord.

Damaged power cords may lead to fire accidents, so please be sure that there are no damages.
If you find a damaged power cord, please exchange it with a suitable one.

⑨ There should be no spark traces or similar marks on the power plug.

When spark traces or similar marks are found on the power supply plug, please check the connection and advise on secure connections and suitable usage. Please exchange the power cord if necessary.

⑩ Safe environment should be secured during servicing.

When you perform repairs, please pay attention to static electricity, furniture, household articles, etc. in order to prevent injuries.
Please pay attention to your surroundings and repair safely.

2. Adjustments

To keep the original performance of the products, optimum adjustments and confirmation of characteristics within specification.
Adjustments should be performed in accordance with the procedures/instructions described in this manual.

3. Lubricants, Glues, and Replacement parts

Use grease and adhesives that are equal to the specified substance.
Make sure the proper amount is applied.

4. Cleaning

For parts that require cleaning, such as optical pickups, tape deck heads, lenses and mirrors used in projection monitors, proper cleaning should be performed to restore their performances.

5. Shipping mode and Shipping screws

To protect products from damages or failures during transit, the shipping mode should be set or the shipping screws should be installed before shipment. Please be sure to follow this method especially if it is specified in this manual.

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1. SPECIFICATIONS

● Specifications

General

Power requirements . . . . . 220 V to 240 V, 50 Hz / 60 Hz
Power consumption . . . . . 48 W
Power consumption in standby mode . . . . . 0.63 W
(Front panel display : off)
Weight . . . . . 4.5 kg
Dimensions . . . . . 420 mm (W) x 79 mm (H) x 318 mm (D)
Operating temperature . . . . . +5 °C to +35 °C
Operating humidity . . . . . 5 % to 85 %
(no condensation)
TV system . . . . . PAL/SECAM/NTSC (external input only)

Readable discs

DVD-Video, DVD-RW, DVD-R, DVD+R, DVD+RW, DVD-RAM, Video CD, Super VCD, CD, CD-R/-RW (WMA, MP3, JPEG, CD-DA)

Recording discs and formats

DVD-R/-RW : VR mode and Video mode
DVD+R/+RW : +VR mode
DVD-RAM : VR mode
DVD-R DL : VR mode and Video mode
DVD+R DL : +VR mode

Video recording format

Sampling frequency . . . . . 13.5 MHz
Compression format . . . . . MPEG

Audio recording format

Sampling frequency . . . . . 48 kHz
Compression format . . . . . Dolby Digital or Linear PCM
(uncompressed)

Recording time

HDD (160 GB) (DVR-540HX-S)

Fine (XP) . . . . . Approx. 34 h
Standard Play (SP) . . . . . Approx. 68 h
Long Play (LP) . . . . . Approx. 136 h
Extended Play (EP) . . . . . Approx. 204 h
Super Long Play (SLP) . . . . . Approx. 272 h
Super Extended Play (SEP) . . . . . Approx. 340 h
Manual Mode (MN) . . . . . Approx. 34 h to 455 h

HDD (80 GB) (DVR-440HX-S)

Fine (XP) . . . . . Approx. 17 h
Standard Play (SP) . . . . . Approx. 34 h
Long Play (LP) . . . . . Approx. 68 h
Extended Play (EP) . . . . . Approx. 102 h
Super Long Play (SLP) . . . . . Approx. 136 h
Super Extended Play (SEP) . . . . . Approx. 170 h
Manual Mode (MN) . . . . . Approx. 17 h to 227 h

DVD-R/-RW, DVD+R/+RW, DVD-RAM

Fine (XP) . . . . . Approx. 1 h
Standard Play (SP) . . . . . Approx. 2 h
Long Play (LP) . . . . . Approx. 4 h
Extended Play (EP) . . . . . Approx. 6 h
Super Long Play (SLP) . . . . . Approx. 8 h
Super Extended Play (SEP) . . . . . Approx. 10 h
(DVD-R/-RW, DVD-RAM only)
Manual Mode (MN)
DVD-R/-RW/-RAM . . . . . Approx. 1 h to 13 h
DVD+R/+RW . . . . . Approx. 1 h to 8 h

DVD-R DL/DVD+R DL

Fine (XP) . . . . . Approx. 1 h 51 m
Standard Play (SP) . . . . . Approx. 3 h 35 m
Long Play (LP) . . . . . Approx. 7 h 11 m
Extended Play (EP) . . . . . Approx. 10 h 46 m
Super Long Play (SLP) Approx. 14 h 21 m
Super Extended Play (SEP) . . . . . Approx. 17 h 57 m
(DVD-R DL only)
Manual Mode (MN)
DVD-R DL . . . . . Approx. 1 h 51 m to 24 h
DVD+R DL . . . . . Approx. 1 h 51 m to 14 h 21 m

Timer

Programs . . . . . 1 month/32 programs
Clock . . . . . Quartz lock (24-hour digital display)

Tuner (analog)

Receivable channels

	SECAM B/G PAL B/G		PAL I	
	Frequency	Channel	Frequency	Channel
VHF (low)	47 MHz to 89 MHz	E2 to E4 X to Z	44 MHz to 89 MHz	A to C X to Z
VHF (high)	104 MHz to 300 MHz	E5 to E12 S1 to S20 M1 to M10 U1 to U10	104 MHz to 300 MHz	D to J 11, 13 S1 to S20
Hyper	302 MHz to 470 MHz	S21 to S41	302 MHz to 470 MHz	S21 to S41
UHF	470 MHz to 862 MHz	E21 to E69	470 MHz to 862 MHz	E21 to E69

	SECAM L		SECAM D/K PAL D/K	
	Frequency	Channel	Frequency	Channel
VHF (low)	49 MHz to 65 MHz	FB,FC1,FC	49 MHz to 94 MHz	R1 to R5
VHF (high)	104 MHz to 300 MHz	F1 to F6 B to Q	104 MHz to 300 MHz	R6 to R12 S1 to S20
Hyper	300 MHz to 470 MHz	S21 to S41	302 MHz to 470 MHz	S21 to S41
UHF	470 MHz to 862 MHz	21 to 69	470 MHz to 862 MHz	E21 to E69

STEREO
B/G - A2
I - NICAM
L - NICAM
B/G - NICAM
D/K - NICAM

Tuner (digital)

Receiving system . . . . . DVB-T (2 K / 8 K COFDM)
Tuner VHF/UHF . . . . . VHF band III (170 MHz to 230 MHz)
UHF band IV, V (470 MHz to 862 MHz)
Auto Channel Preset . . . . . 999 ch, Auto Preset
Auto Label, Auto Sort
Audio . . . . . Stereo MPEG layer I/II

This product's digital tuner has been confirmed for use in the following countries: Belgium, France, Germany, Italy, Spain, UK.

Input/Output

Antenna
..... 75Ω IEC 169-2 connector for VHF/UHF in/out (analog)
..... 75Ω IEC 169-2 connector for VHF/UHF in/out (digital)

Video input ..... AV2 (Input1), Input 2 (front)
Input level ..... 1 Vp-p (75Ω)
Jacks ..... AV connector (Input 1), RCA jack (Input 2)

Video output ..... AV1, Output
Output level ..... 1 Vp-p (75Ω)
Jacks ..... AV connector (AV1)
RCA jack (Output)
S-Video input ..... AV2 (Input1), Input 2 (front)
Y (luminance) - Input level ..... 1 Vp-p (75Ω)
C (colour) - Input leve ..... 300 mVp-p (75Ω)
Jacks .... AV connector (Input 1), 4 pin mini DIN (Input 2)

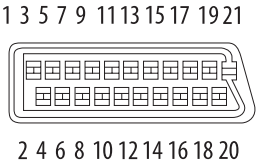
S-Video output ..... AV1, Output
Y (luminance) - Output level ..... 1 Vp-p (75Ω)
C (colour) - Output level ..... 300 mVp-p (75Ω)
Jacks ..... AV connector (AV1), 4 pin mini DIN (Output)

Component video output
Output level ..... Y : 1.0 Vp-p (75Ω)
PB, PR : 0.7 Vp-p (75Ω)
Jacks ..... RCA jacks
RGB input AV2 (Input1)
Input level ..... 0.7 Vp-p (75Ω)
Jacks ..... AV connector (Input 1)
RGB output AV1
Output level ..... 0.7 Vp-p (75Ω)
Jacks ..... AV connector (AV1)
Audio input ..... AV2 (input1), Input 2 (front) L/R
Input level
During audio input ..... 2 V rms
(Input impedance: more than 22 kΩ)
Jacks ..... AV connector (Input 1), RCA jacks (Input 2)

Audio output AV1, Output
During audio output ..... 2 V rms
(Output impedance: less than 1.5 kΩ)
Jacks ..... AV connector (AV1), RCA jacks (Output)

Control input ..... Mini jack
Digital audio ouptut ..... Coaxial
G-LINK™ ..... Mini jack

AV Connectors (21-pin connector assignment)
AV connector input/output ..... 21-pin connector
This connector provides the video and audio signals for connection to a compatible colour TV or monitor.



PIN no.	AV1(RGB)-TV / AV2(INPUT 1)
1	Audio 2/R out / Audio 2/R out
2	– / Audio 2/R in
11	G out / G in
3	Audio 1/L out / Audio 1/L out
6	– / Audio 1/L in
15	R or C out / R or C in
4	GND
17	GND
7	B out / B in
19	Video out or Y out / Video out
20	– / Video in or Y in
8	Status
21	GND

Supplied accessories

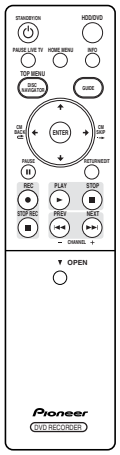
Remote control 1
Dry cell batteries (AA/R6P) 2
Audio / Video cable (red/white/yellow) 1
G-LINK™ cable 1
RF antenna cable ..... 2 (1.5 m and 30 cm)
Power cable 1
Operating Instructions
Warranty card 1

Note : The specifications and design of this product are subject to change without notice, due to improvement.

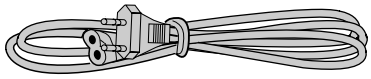
This product includes FontAvenue® fonts licenced by NEC corporation. FontAvenue is a registered trademark of NEC Corporation.

● Accessories

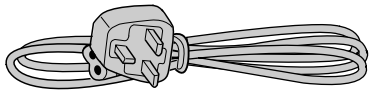
• Remote control ×1
(VXX3092)



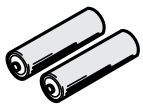
• Power cable ×1
(ADG1127 : WYXK5 types)



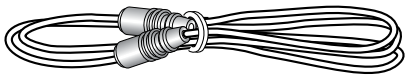
(ADG7077 : WVXK/5, WVXK5 types)



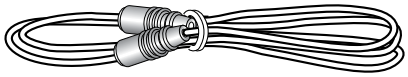
• Dry cell batteries ×2
(AA/R6P)



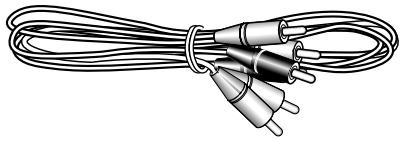
• RF antenna cable(PAL) ×1
(VDE1075) 1.5m



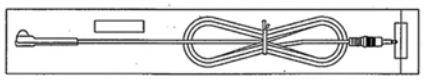
• RF antenna cable(PAL) ×1
(VDE1096) 30cm



• Audio / Video cable(1.5m) ×1
(red/white/yellow)
(VDE1077)



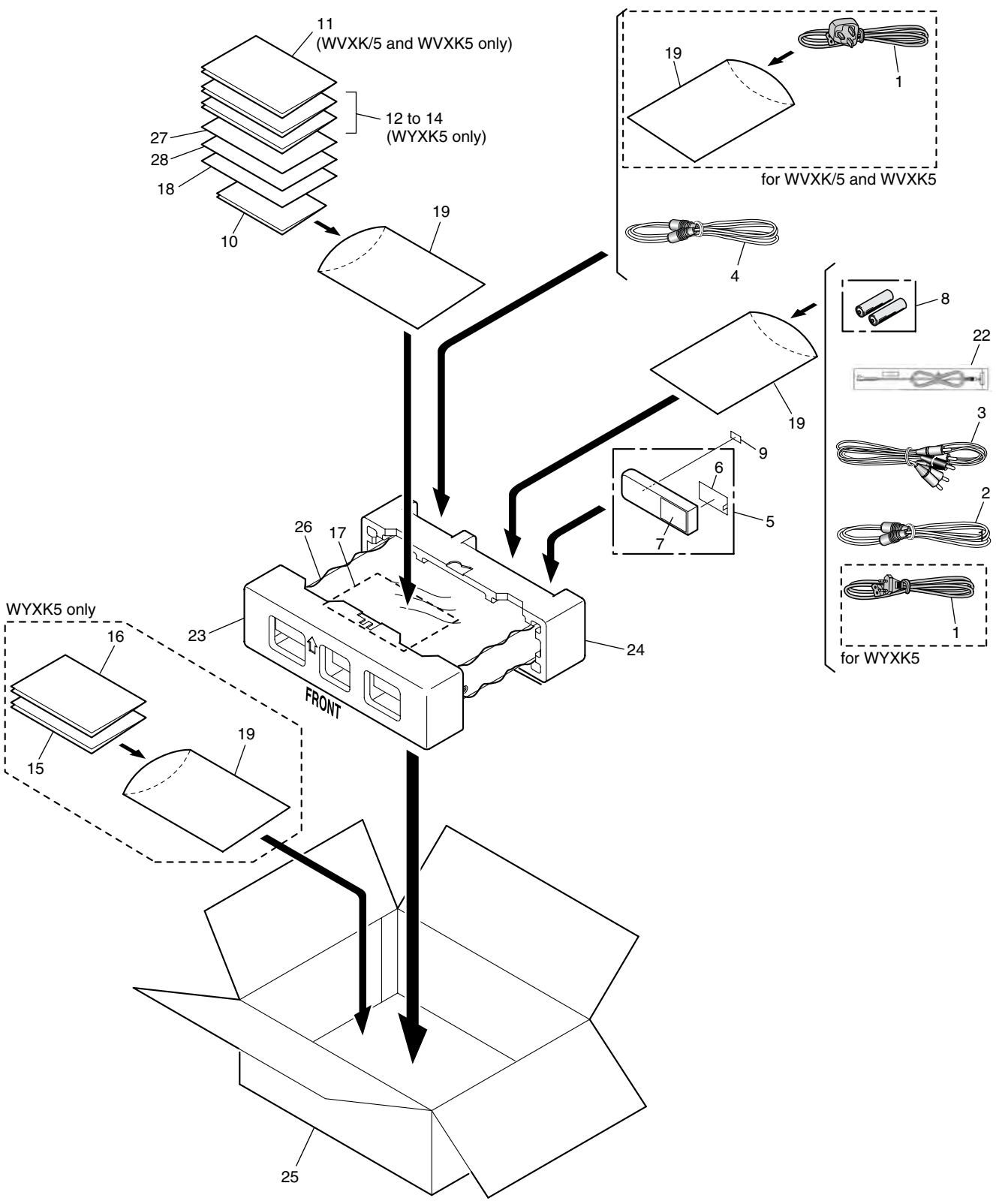
• G-Link Cable (3m) ×1
(VDX1010)



2. EXPLODED VIEWS AND PARTS LIST

NOTES:
- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Screws adjacent to ▼ mark on product are used for disassembly.*
- *For the applying amount of lubricants or glue, follow the instructions in this manual. (In the case of no amount instructions, apply as you think it appropriate.)*

2.1 PACKING



(1) PACKING SECTION PARTS LIST

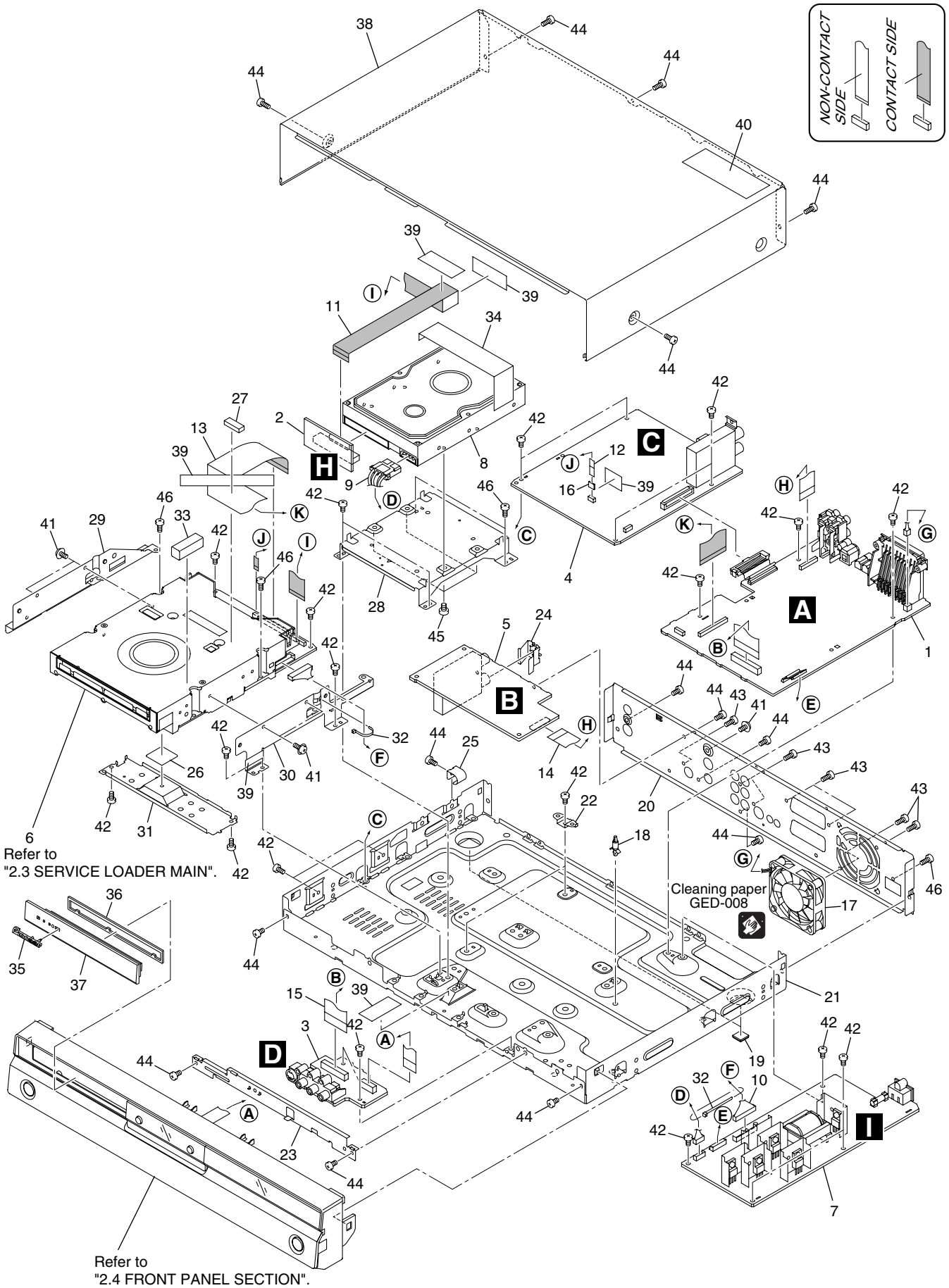
Mark	No.	Description	Part No.
⚠	1	Power Cord	See Contrast table (2)
	2	RF Antenna Cable (PAL)	VDE1075
	3	Audio/Video Cable (1.5m)	VDE1077
	4	RF Antenna Cable (PAL)	VDE1096
	5	Remote Control Unit	VXX3092
	6	Battery Cover	VZN1004
	7	Top Cover	VZN1009
NSP	8	Dry Cell Battery (R6P, AA)	VEM1010
	9	WEEE Label	VRW2231
NSP	10	Warranty Card	ARY7065
	11	Operating Instructions (English)	See Contrast table (2)
	12	Operating Instructions (French)	See Contrast table (2)
	13	Operating Instructions (German)	See Contrast table (2)
	14	Operating Instructions (Italian)	See Contrast table (2)
	15	Operating Instructions (Spanish)	See Contrast table (2)
	16	Operating Instructions (Dutch)	See Contrast table (2)
NSP	17	HDD Caution 8L B	VRR1046
NSP	18	HDD Caution 8L	VRR1047
	19	Polyethylene Bag B5	VHL1051
	20	•••••••	
	21	•••••••	
	22	G-Link Cable	VDX1010
	23	Front Pad	VHA1408
	24	Rear Pad	VHA1409
	25	Packing Case	See Contrast table (2)
	26	Mirror Sheet	VHL1107
	27	PLTV Caution	VRR1068
	28	DTV Time Caution	VRR1069

(2) CONTRAST TABLE

DVR-540HX-S/WYXK5, WVXK/5 and DVR-440HX-S/WVXK5 are constructed the same except for the following:

Mark	No.	Symbol and Description	DVR-540HX-S /WYXK5	DVR-540HX-S /WVXK/5	DVR-440HX-S /WVXK5
⚠	1	Power Cord	ADG1127	ADG7077	ADG7077
	11	Operating Instructions (English)	Not used	VRB1439	VRB1439
	12	Operating Instructions (French)	VRC1334	Not used	Not used
	13	Operating Instructions (German)	VRC1335	Not used	Not used
	14	Operating Instructions (Italian)	VRC1336	Not used	Not used
	15	Operating Instructions (Spanish)	VRC1337	Not used	Not used
	16	Operating Instructions (Dutch)	VRC1338	Not used	Not used
	25	Packing Case	VHG2712	VHG2754	VHG2713

2.2 EXTERIOR SECTION



(1) EXTERIOR SECTION PARTS LIST

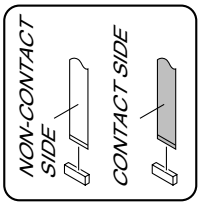
Mark	No.	Description	Part No.
	1	JACB Assy	VWV2230
	2	ATAB Assy	VWV2231
	3	FRJB Assy	VWV2232
	4	DTBR Assy	VWV2228
	5	TUNB Assy	VWV2229
NSP	6	Service LOADER MAIN	VXU1002
⚠	7	POWER SUPPLY Unit	VWR1403
	8	HDD	See Contrast table (2)
	9	Housing Assy (4P)	VKP2357
	10	Connector Assy (13P)	PF13PP-S42
	11	Flexible Cable (40P)	VDA2136
	12	Flexible Cable (10P)	VDA2137
	13	Flexible Cable (35P)	VDA2138
	14	Flexible Cable (19P)	VDA2141
	15	Flexible Cable (26P)	VDA2140
	16	Ferrite Core	VTH1057
	17	DC Fan Motor 60	VXM1125
	18	PCB Support	AEC1215
	19	Rubber Foot	VEB1349
	20	Rear Panel	See Contrast table (2)
NSP	21	Chassis	VNB1055
NSP	22	PCB Stay	VNE2399
NSP	23	Bridge	VNE2429
	24	Earth Plate TU	VBK1156
	25	Earth Spring	VBK1161
	26	Radiation Sheet (Silicone)	VEB1360
	27	Rubber Spacer	VEB1378
NSP	28	HDD Stay	VNE2423
	29	Writer Stay L	VNE2433
	30	Writer Stay R	VNE2434
	31	Heatsink	VNH1077
NSP	32	Binder (BK-1)	ZCA-BK1
	33	Gasket 30 x 10T	VEC2522
	34	Aluminum Tape 150 x 25	VEF1061
	35	Pioneer Name Plate	VAM1148
	36	Tray Sheet	VEC2500
	37	Tray Panel	VNK5910
	38	Bonnet Case S	VXX3169
NSP	39	Tape	ZTA-156A-19
	40	Laser Caution Label	VRW2262
	41	Screw	AMZ30P040FTC
	42	Screw	BBZ30P060FTC
	43	Screw	BPZ30P080FTC
	44	Screw	BSZ30P040FTC
	45	#6-32 Screw	DBA1125
	46	Screw	PBZ30P080FTC

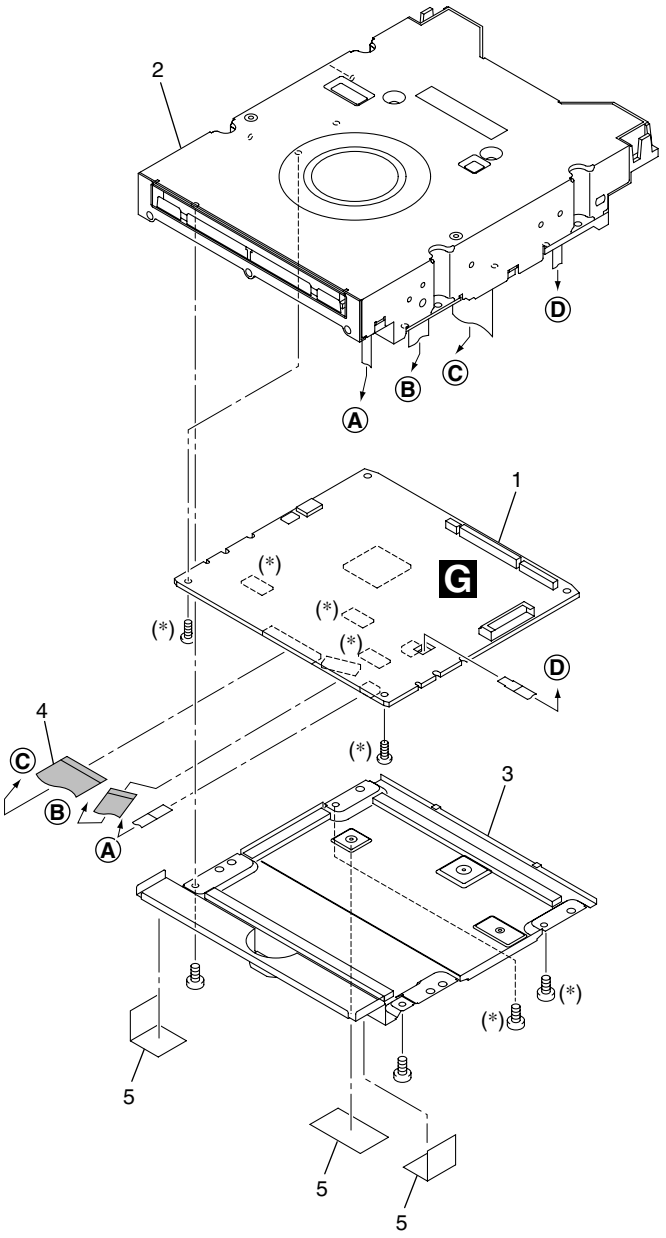
(2) CONTRAST TABLE

DVR-540HX-S/WYXK5, WVXK/5 and DVR-440HX-S/WVXK5 are constructed the same except for the following:

Mark	No.	Symbol and Description	DVR-540HX-S /WYXK5	DVR-540HX-S /WVXK/5	DVR-440HX-S /WVXK5
	8	HDD 160G ST3160022RS	VXF1086	VXF1086	Not used
	8	HDD 80G ST380012R SV	Not used	Not used	VXF1084
	20	Rear Panel	VNA2864	VNA2864	VNA2904

2.3 SERVICE LOADER MAIN





Reuse (*) marked parts when exachanging Service LOADER Assy.

- Silicon Sheet R9B (DEB1726) x3
- Case Screw S (DBA1250) x2
- Frontboard Screw R7C (DBA1220) x2

SERVICE LOADER MAIN PARTS LIST

Mark	No.	Description	Part No.
	1	MAIN Assy (for service)	VXX3159
	2	LOADER Assy (for service)	VXX3156
	3	Low Case U11	DNC1761
	4	FFC U11	DDX1208
NSP	5	Tape	ZTA-156A-19

A

B

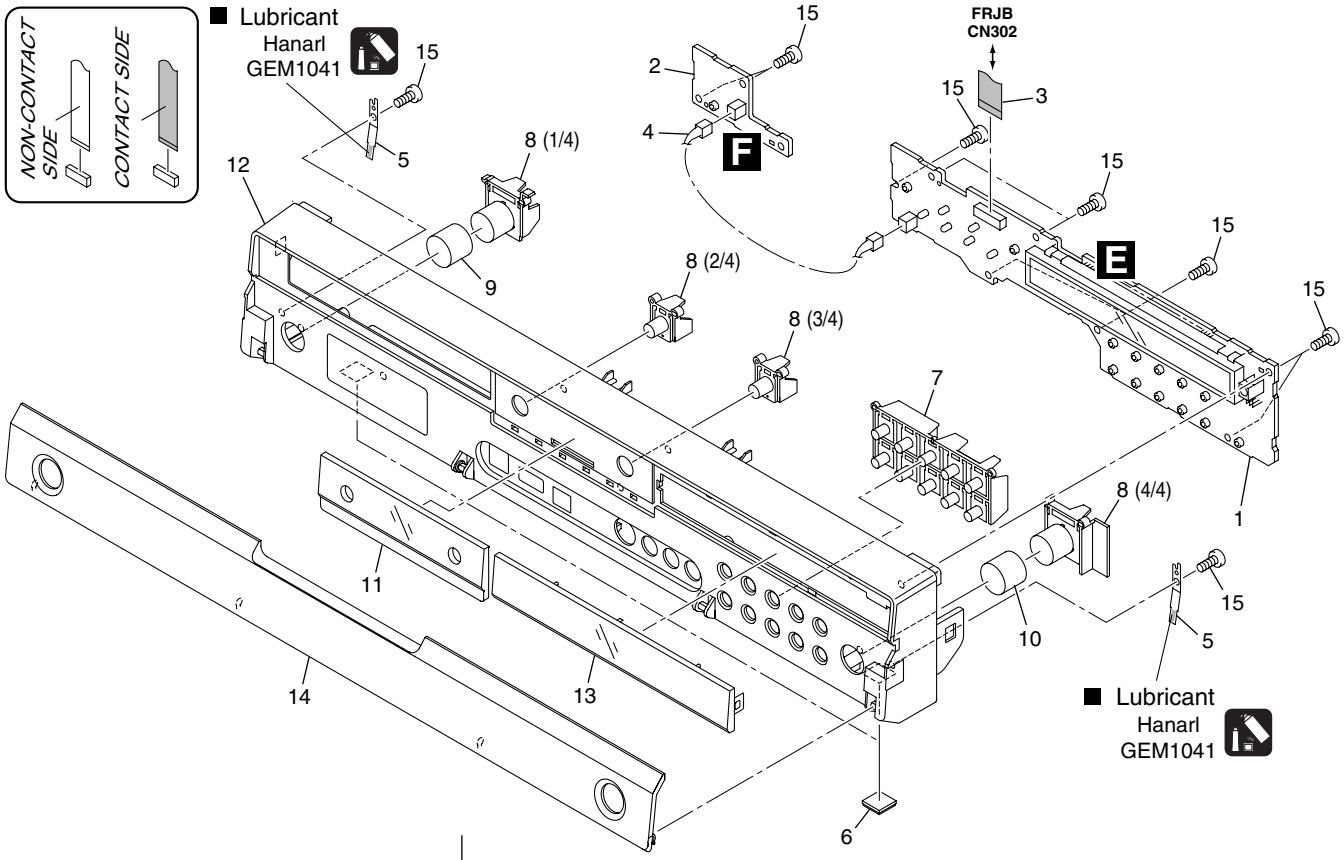
C

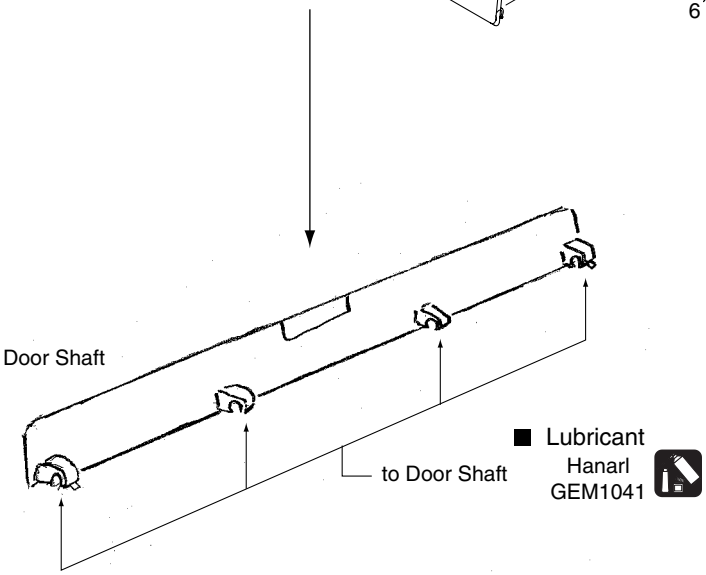
D

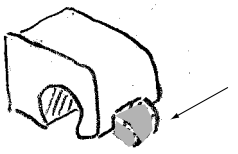
E

F

2.4 FRONT PANEL SECTION







Paste lubricant hanarl (GEM1041) to salient points of both side of the door.

(1) FRONT PANEL SECTION PARTS LIST

Mark	No.	Description	Part No.
	1	FLKY Assy	VWG2571
	2	PWSB Assy	VWG2572
	3	Flexible Cable (14P)	VDA2139
	4	Housing Assy (2P)	VKP2382
	5	Door Spring	VBK1159
	6	Rubber Foot	VEB1349
	7	Main Key	VNK5937
	8	Key Base	VNK5938
	9	Key Top P	VNK5939
	10	Key Top R	VNK5940
	11	Center Lens	VNK5941
	12	Front Panel	VNK5951
	13	FL Lens PTD	See Contrast table (2)
	14	Door PTD	See Contrast table (2)
	15	Screw	BPZ30P080FTC

(2) CONTRAST TABLE

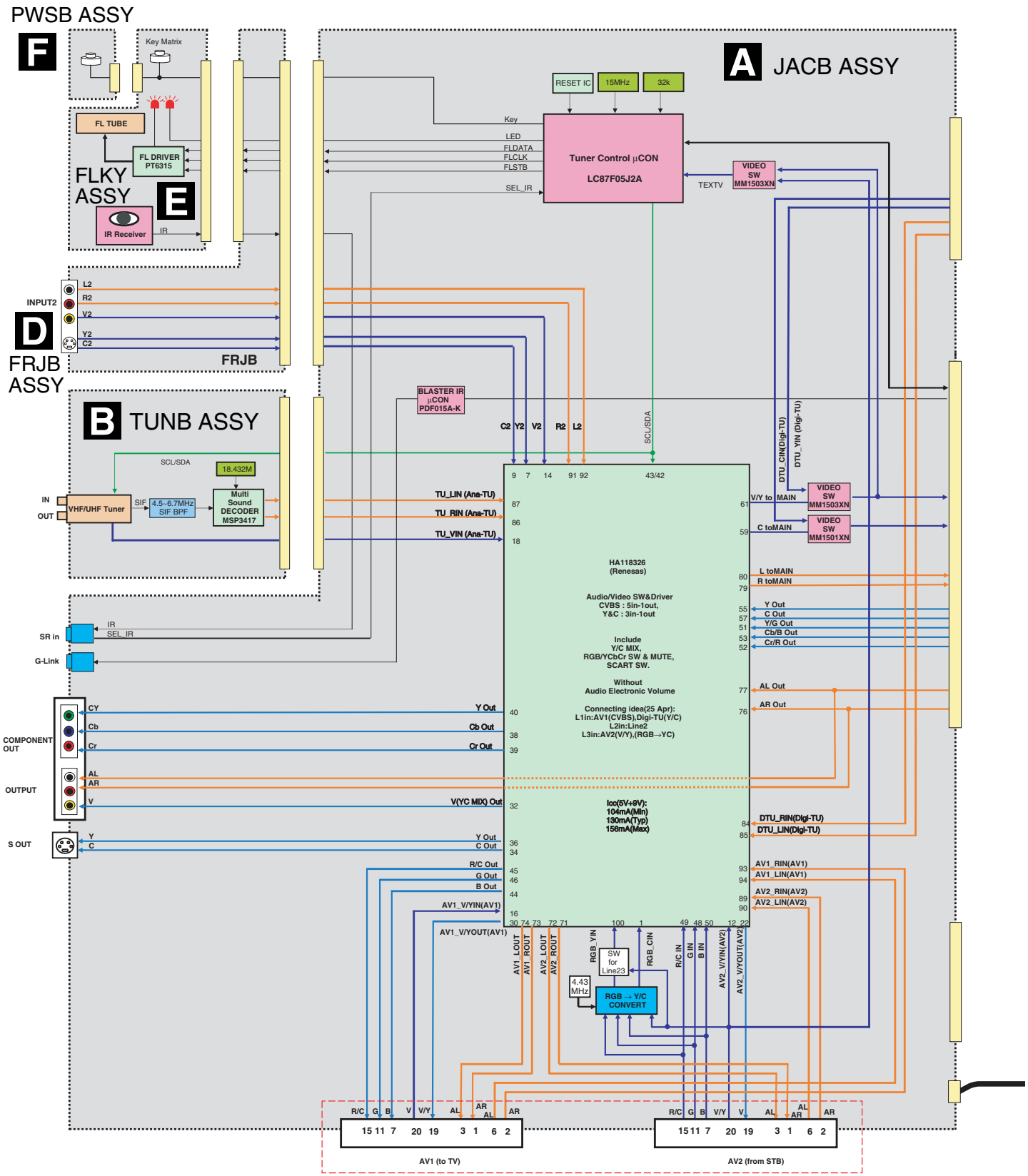
DVR-540HX-S/WYXK5, WVXK/5 and DVR-440HX-S/WVXK5 are constructed the same except for the following:

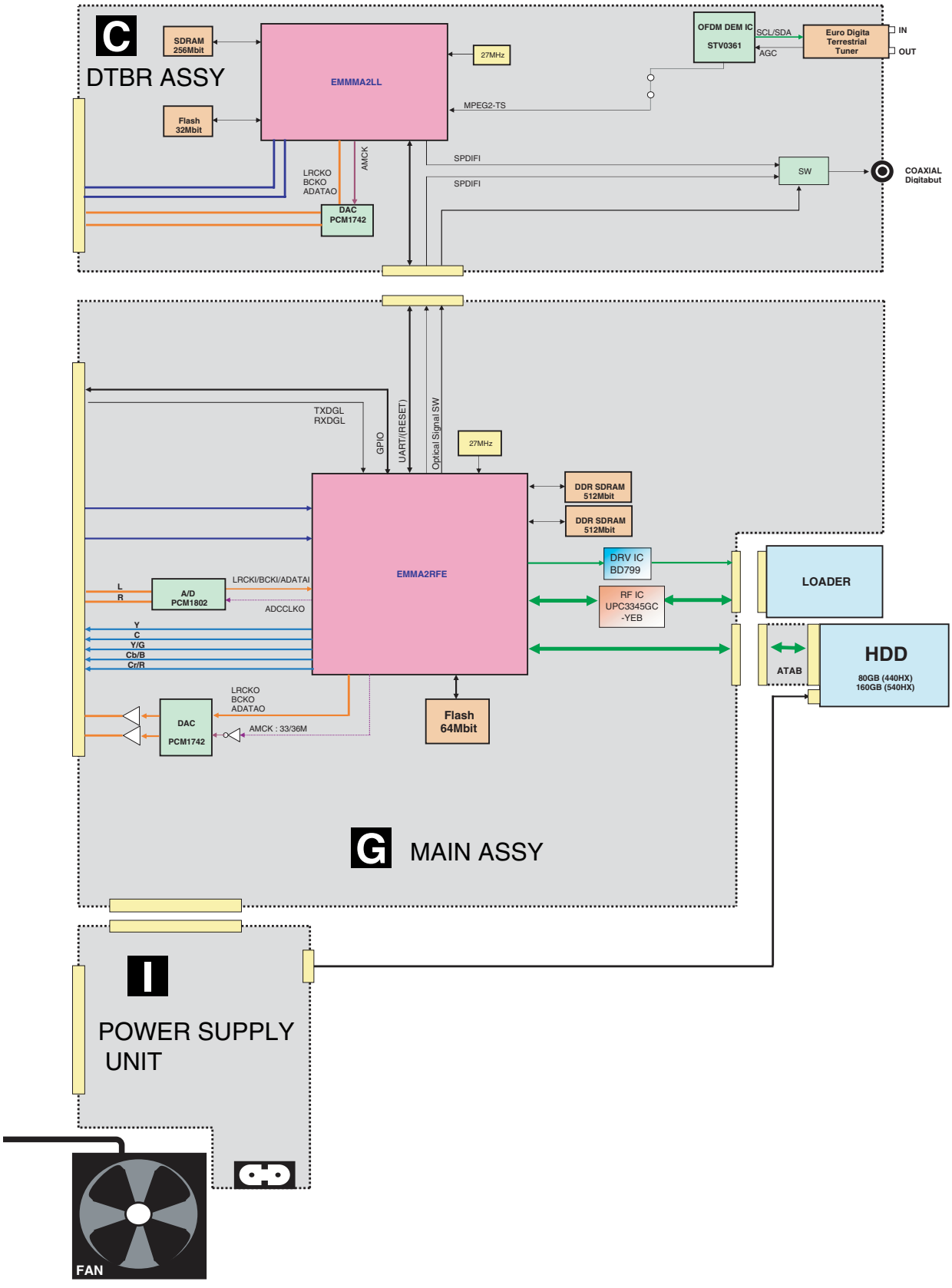
Mark	No.	Symbol and Description	DVR-540HX-S /WYXK5	DVR-540HX-S /WVXK/5	DVR-440HX-S /WVXK5
	13	FL Lens PTD	VXA2742	VXA2742	VXA2798
	14	Door PTD	VXA2769	VXA2770	VXA2770

3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM

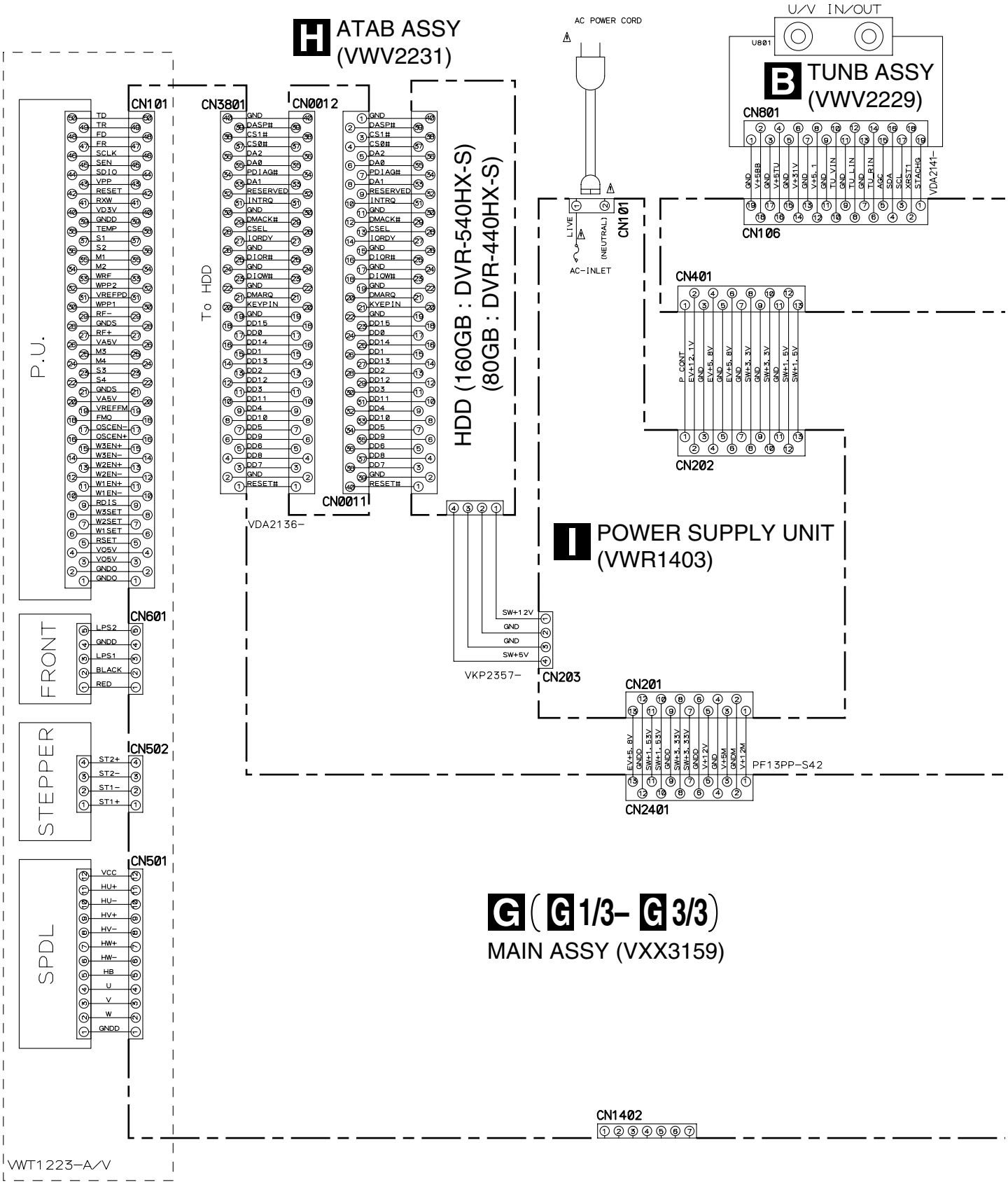
3.1 BLOCK DIAGRAM

3.1.1 OVERALL BLOCK DIAGRAM

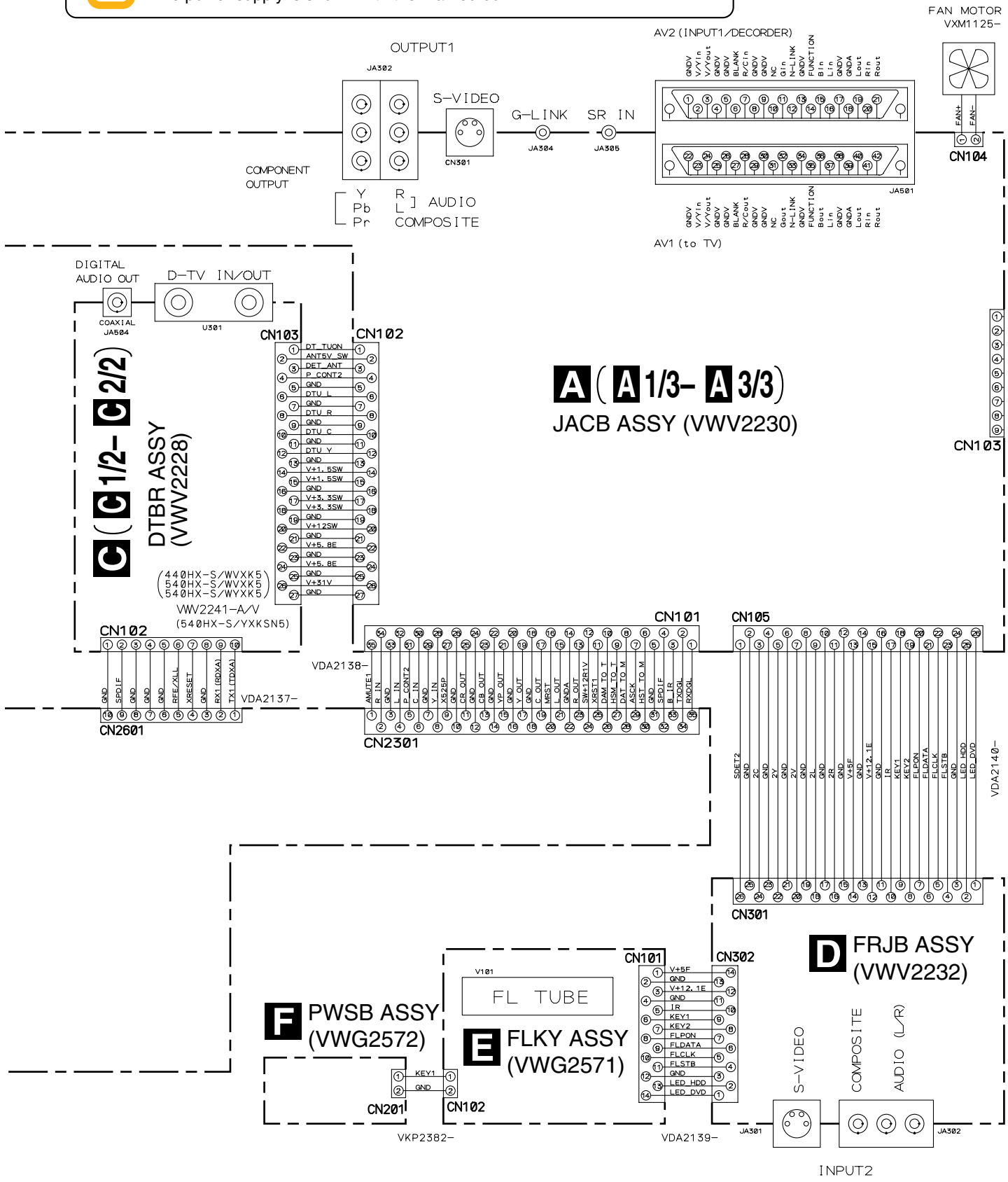



C
DTBR ASSY
SDRAM 256Mbit
Flash 32Mbit
EMMMA2LL
27MHz
MPEG2-TS
OFDM DEM IC
STV0361
SCL/SDA
AGC
Euro Digita Terrestrial Tuner
IN
OUT
LRCKO
BCKO
ADATAO
AMCK
DAC PCM1742
SPDIFI
SPDIFI
SW
COAXIAL Digitabut
TXDGL
RXDGL
GPIO
UART/(RESET)
Optical Signal SW
27MHz
DDR SDRAM 512Mbit
DDR SDRAM 512Mbit
EMMA2RFE
DRV IC BD799
RF IC UPC3345GC -YEB
LOADER
L
R
A/D PCM1802
LRCKI/BCKI/ADATAI
ADCCLKO
Y
C
Y/G
Cb/B
Cr/R
ATAB
HDD
80GB (440HX)
160GB (540HX)
LRCKO
BCKO
ADATAO
DAC PCM1742
AMCK : 33/36M
Flash 64Mbit
G
MAIN ASSY
I
POWER SUPPLY UNIT
FAN

3.2 OVERALL WIRING DIAGRAM



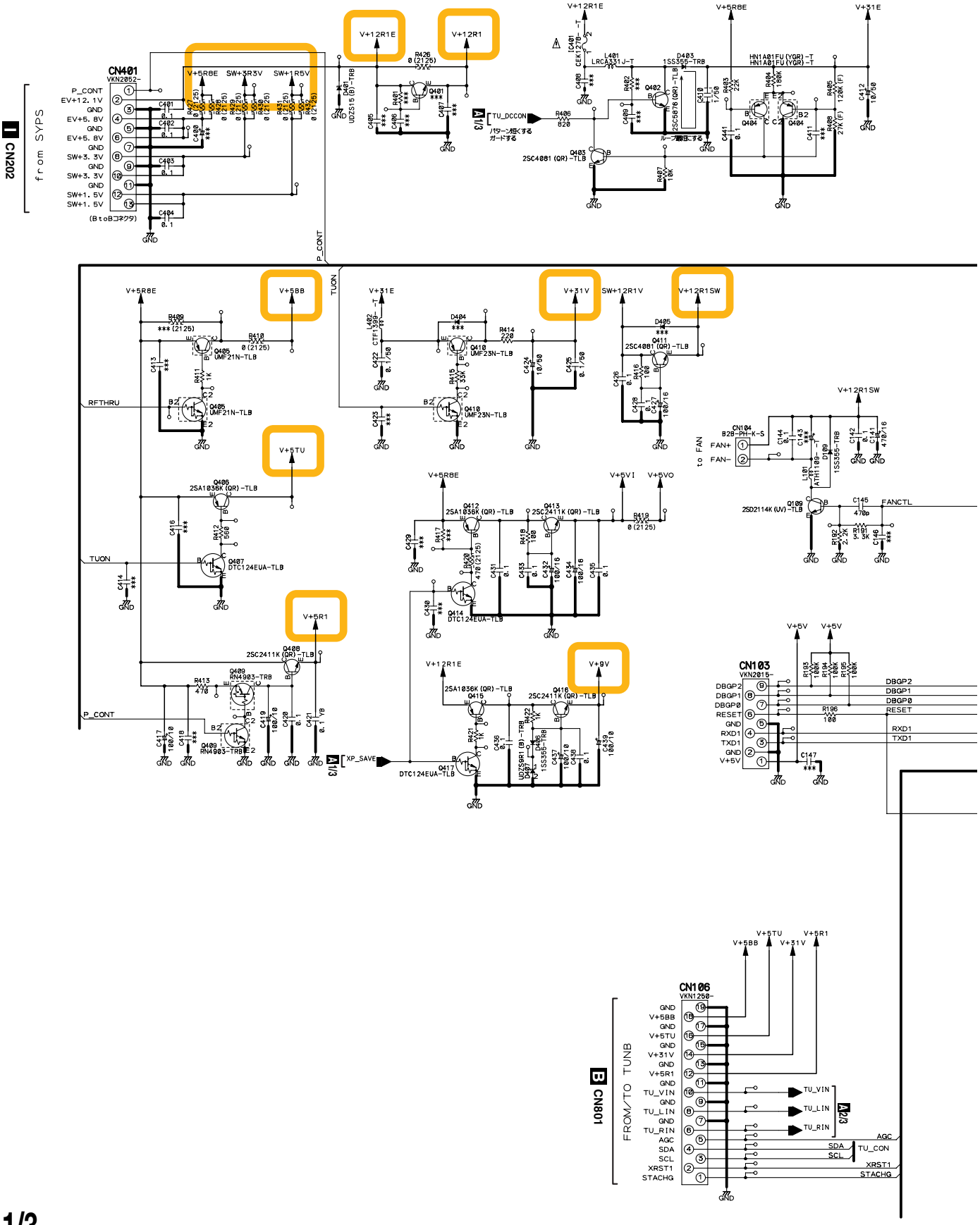
- When ordering service parts, be sure to refer to "EXPLODED VIEWS and PARTS LIST" or "PCB PARTS LIST".
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- : The power supply is shown with the marked box.



3.3 JACB ASSY (1/3)

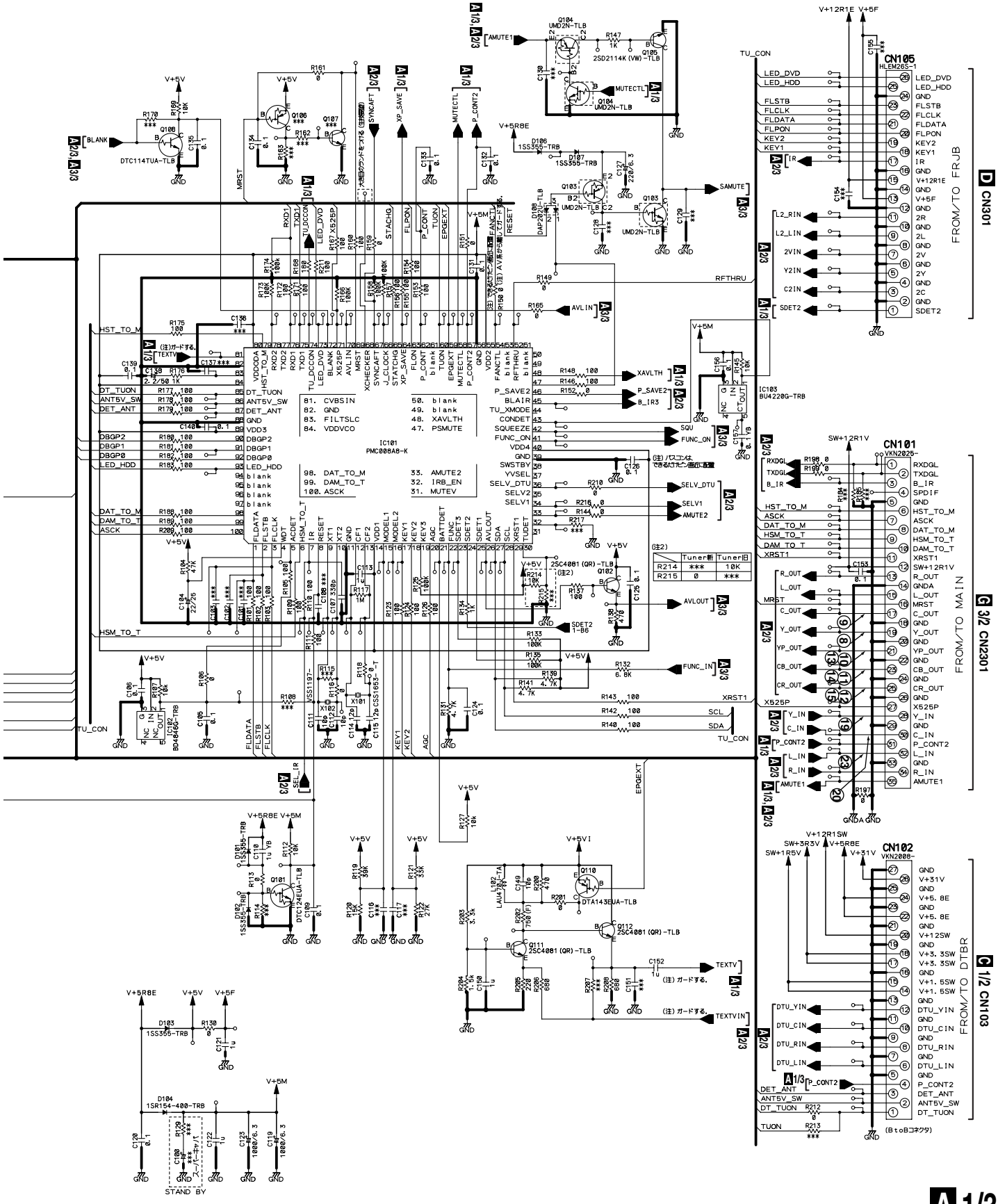
A 1/3 JACB ASSY (VWV2230)

A-b



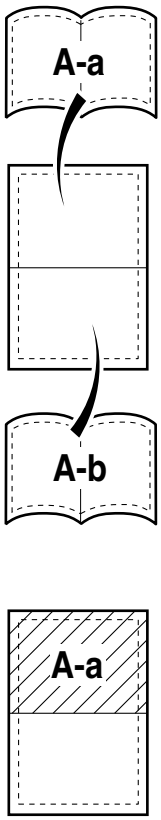
A 1/3

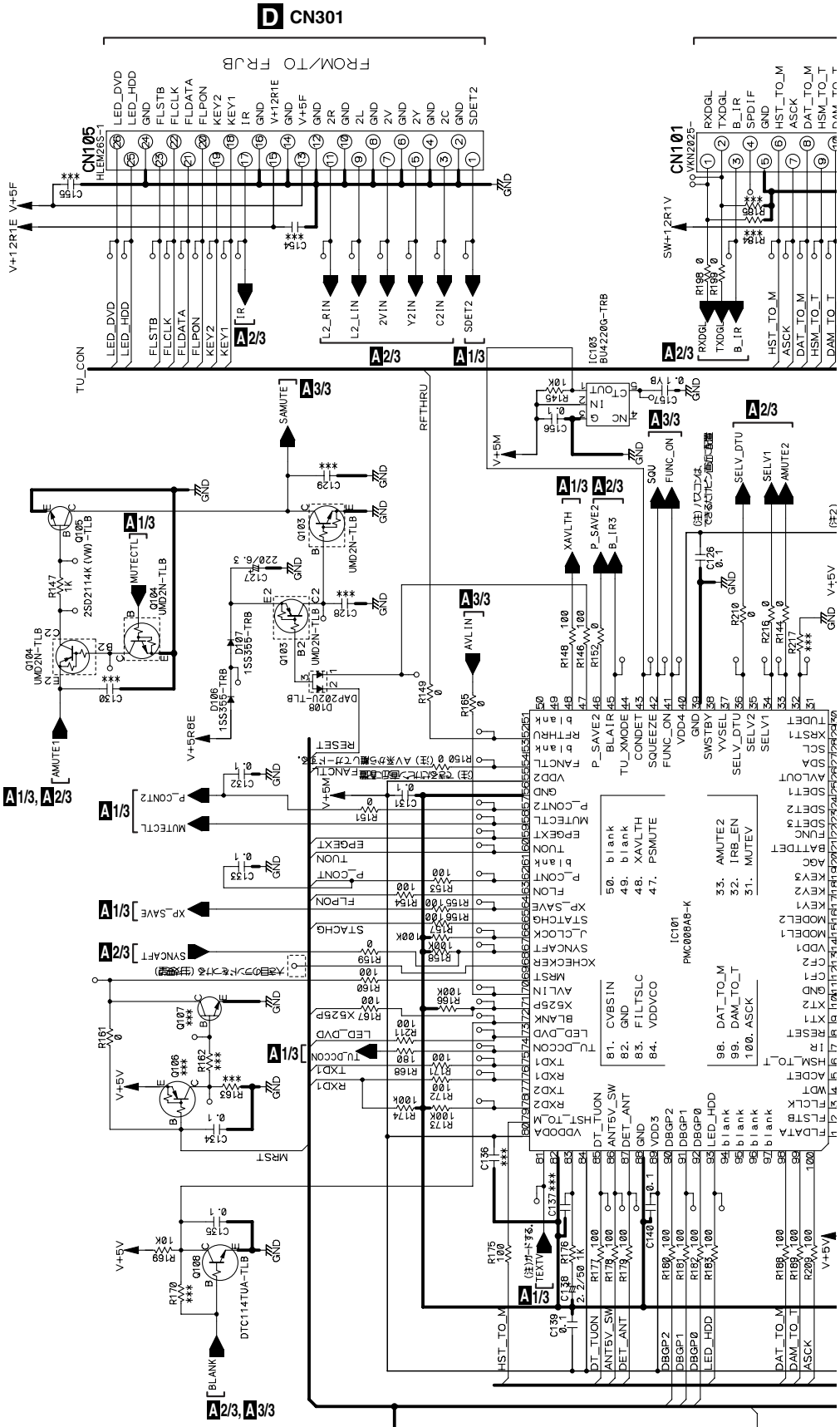
A-a

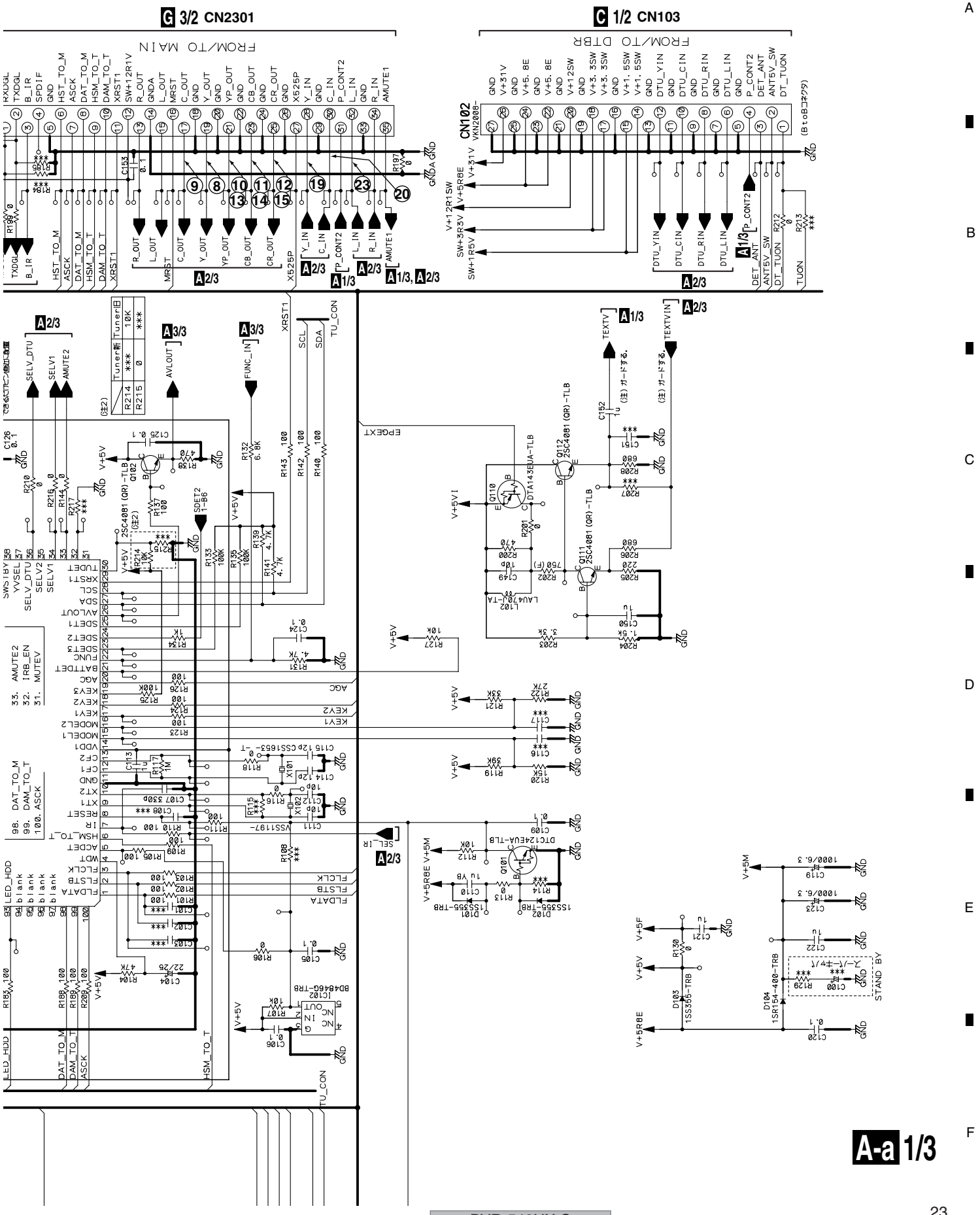

IC101
PMC008A8-K
IC103
BU4220G-TRB
CN105
HLEM265-1
FROM/TO FRJB
CN101
VKN2025-
FROM/TO MAIN
CN102
VKN2008-
FROM/TO DTBR
TU_CON
V+5V
V+5R8E
V+5M
V+12R1E
V+5F
V+12R1V
SW+12R1V
V+5VI
V+31V
V+12R1SW
SW+3R3V
SW+1R5V
V+5R8E
STAND BY
TEXTV
TEXTVIN
AVLIN
AVLOUT
XAVLTH
SAMUTE
RFTHRU
SQU
FUNC_ON
FUNC_IN
SELV_DTU
SELV1
AMUTE2
SCL
SDA
XRST1
EPGEXT
MRST
HSM_TO_T
DAT_TO_M
DAM_TO_T
ASCK
DET_ANT
ANT5V_SW
DT_TUON
TUON
P_SAVE2
B_IR3
P_CONT2
AMUTE1
SDET2
SEL_IR
FLDATA
FLSTB
FLCLK
KEY1
KEY2
AGC
81. CVBSIN
82. GND
83. FILTSLC
84. VDDVCO
50. blank
49. blank
48. XAVLTH
47. PSMUTE
98. DAT_TO_M
99. DAM_TO_T
100. ASCK
33. AMUTE2
32. IRB_EN
31. MUTEV
Tuner新
Tuner旧
R214 *** 10K
R215 0 ***

A 1/3 JACB ASSY (VWV2230)

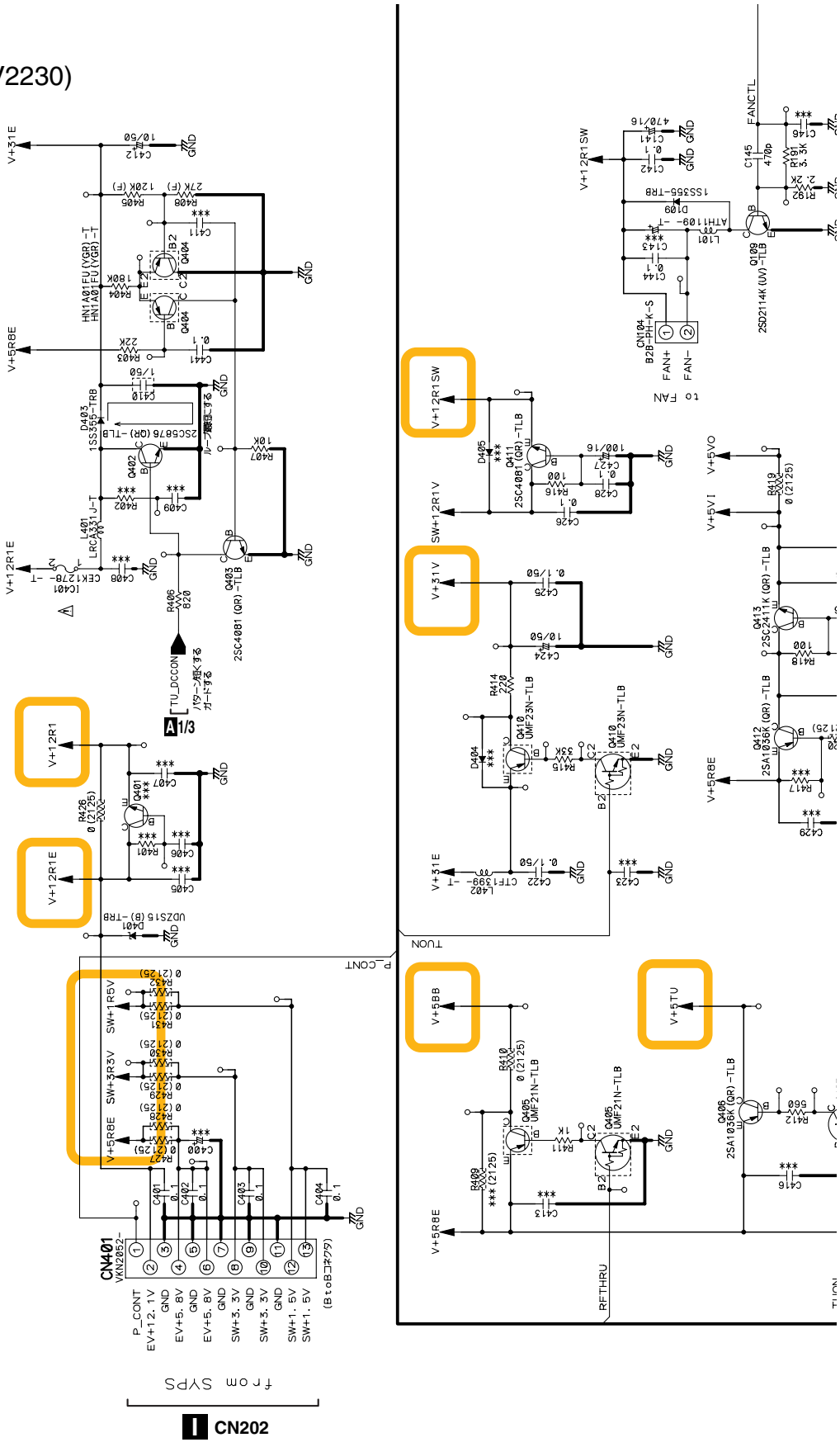
Large size SCH diagram



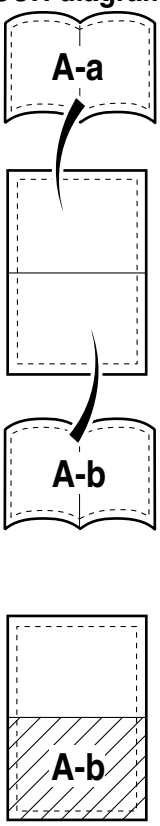



G 3/2 CN2301
FROM/TO MAIN
C 1/2 CN103
FROM/TO DTBR
CN102
A-a 1/3

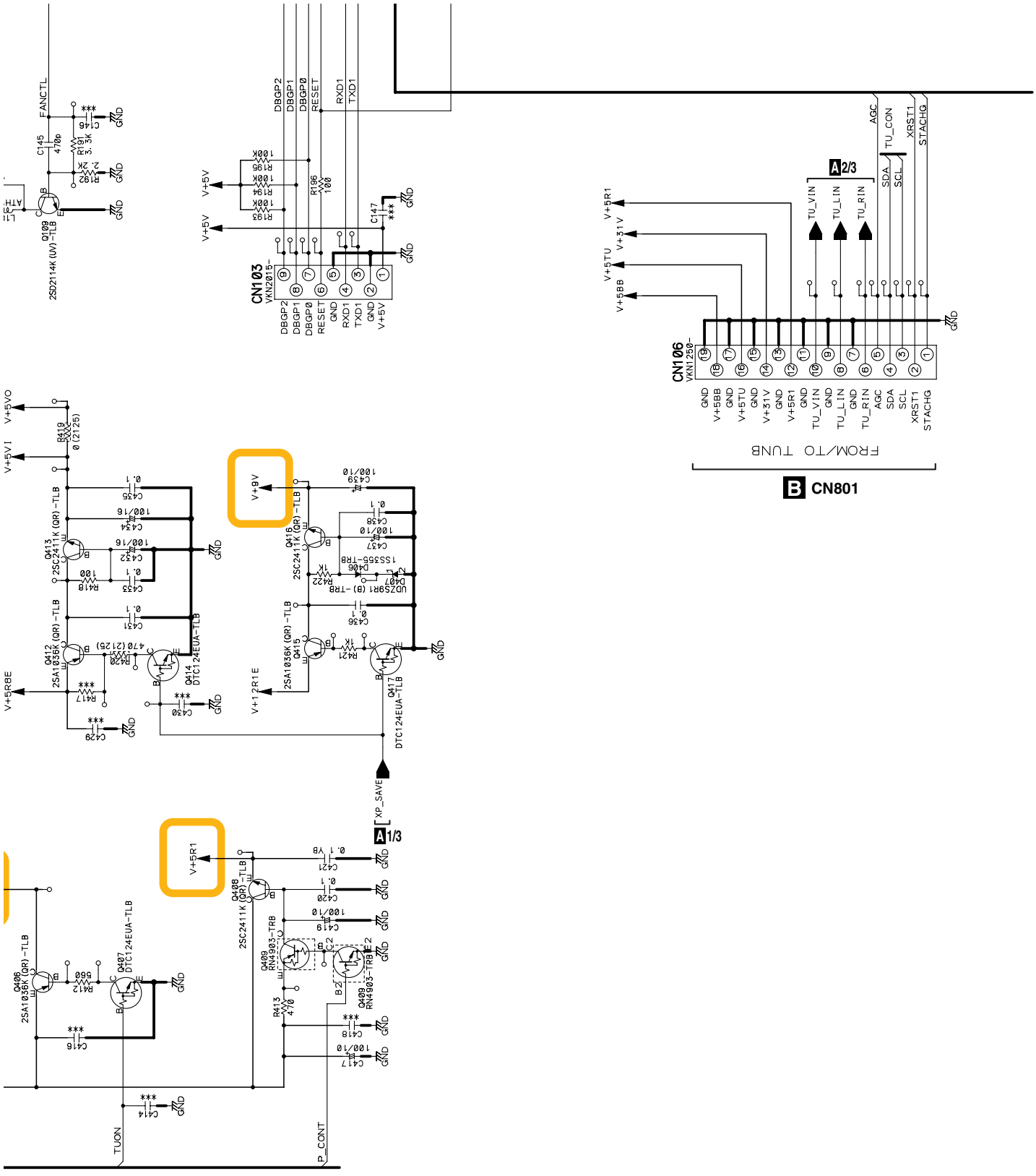
A 1/3 JACB ASSY (VWV2230)



Large size SCH diagram



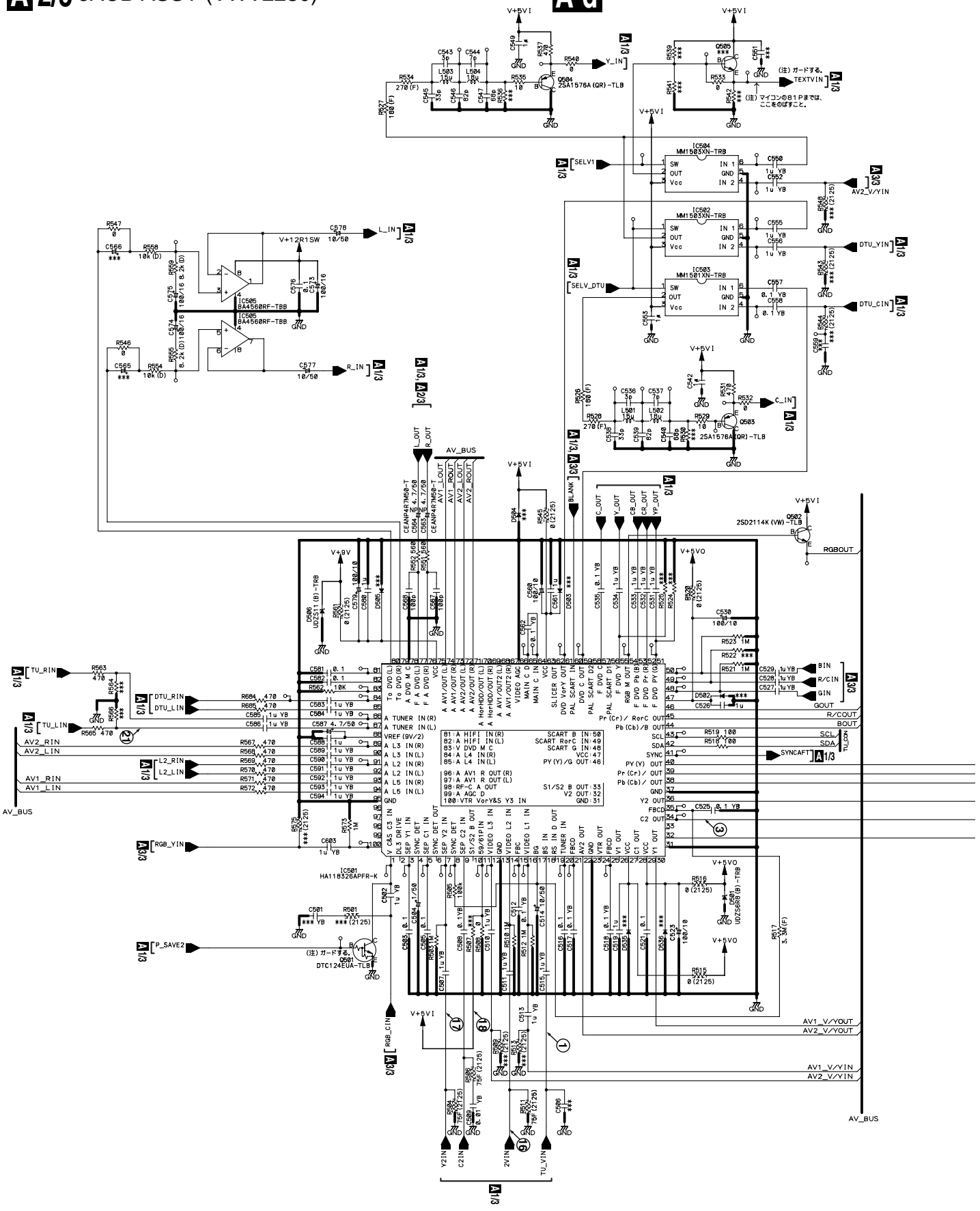
A-b 1/3

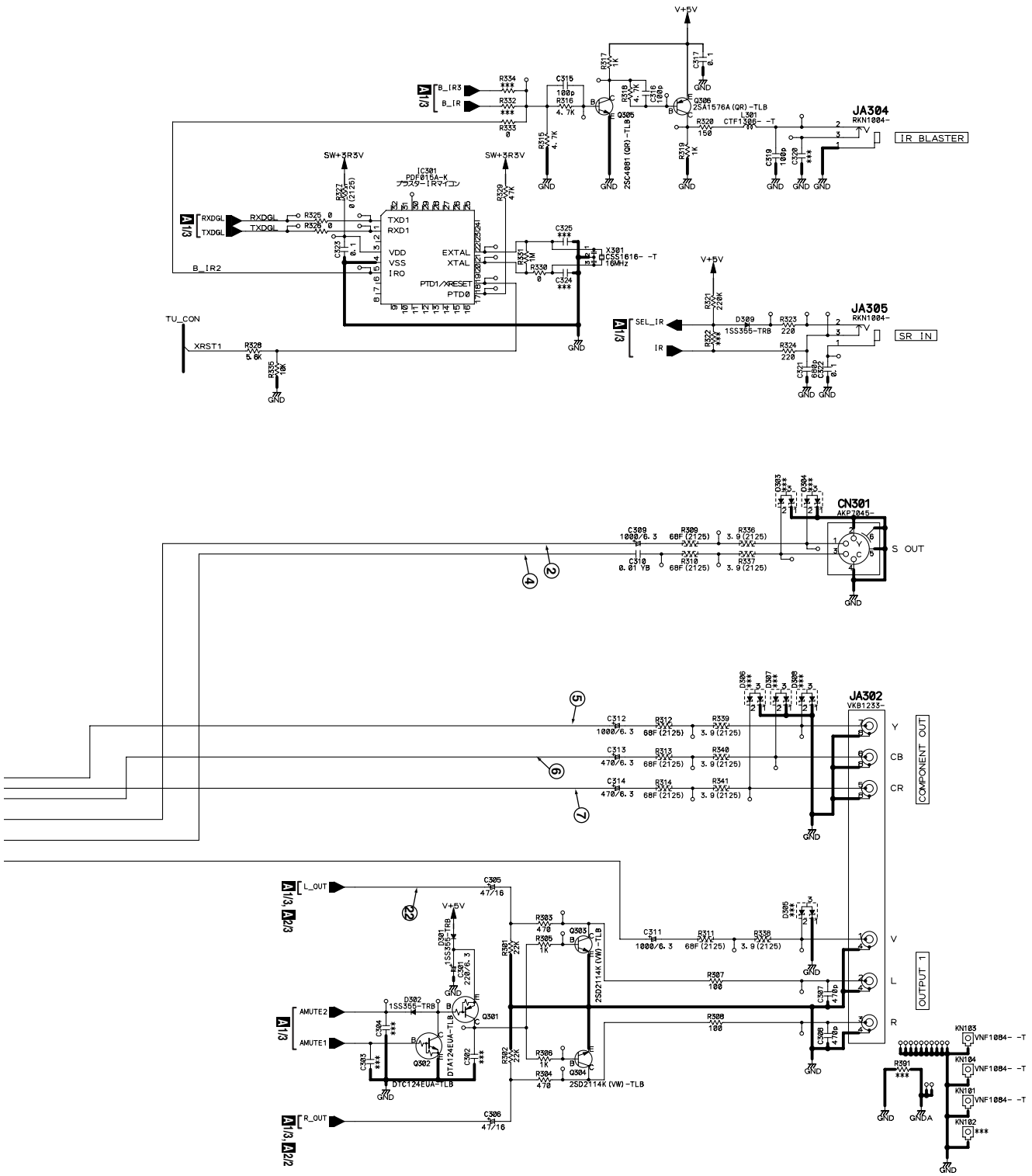

FANCTL
C145 470p
R191 3.3K
R192 2K
Q109 2SD2114K (UV) -TLB
DBGP2
DBGP1
DBGP0
RESET
RXD1
TXD1
R196 100
C147
CN103 VKN2015-
V+5V
GND
AGC
TU_CON
XRST1
STACHG
SDA
SCL
A 2/3
TU_VIN
TU_LIN
TU_RIN
V+5R1
V+31V
V+5TU
V+5BB
CN106 VKN1258-
FROM/TO TUNB
B CN801
V+5VO
V+5VI
R419 0 (2125)
V+9V
Q413 2SC2411K (QR) -TLB
Q412 2SA1036K (QR) -TLB
Q414 DTC124EUA-TLB
Q416 2SC2411K (QR) -TLB
Q415 2SA1036K (QR) -TLB
Q417 DTC124EUA-TLB
D407 UDZS9R1 (B) -TRB
D406 1SS355-TRB
V+5R8E
V+12R1E
XP_SAVE
A 1/3
Q408 2SC2411K (QR) -TLB
Q406 2SA1036K (QR) -TLB
Q407 DTC124EUA-TLB
Q409 RN4903-TRB
R413 470
TUON
P_CONT

3.4 JACB ASSY (2/3)

A 2/3 JACB ASSY (VWV2230)

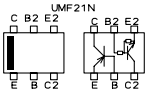
A-d



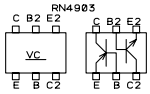


UMB1N (R1=R2=22k)

UMF21N

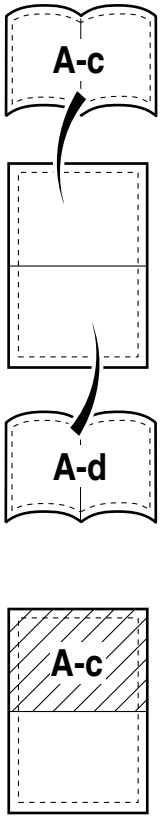


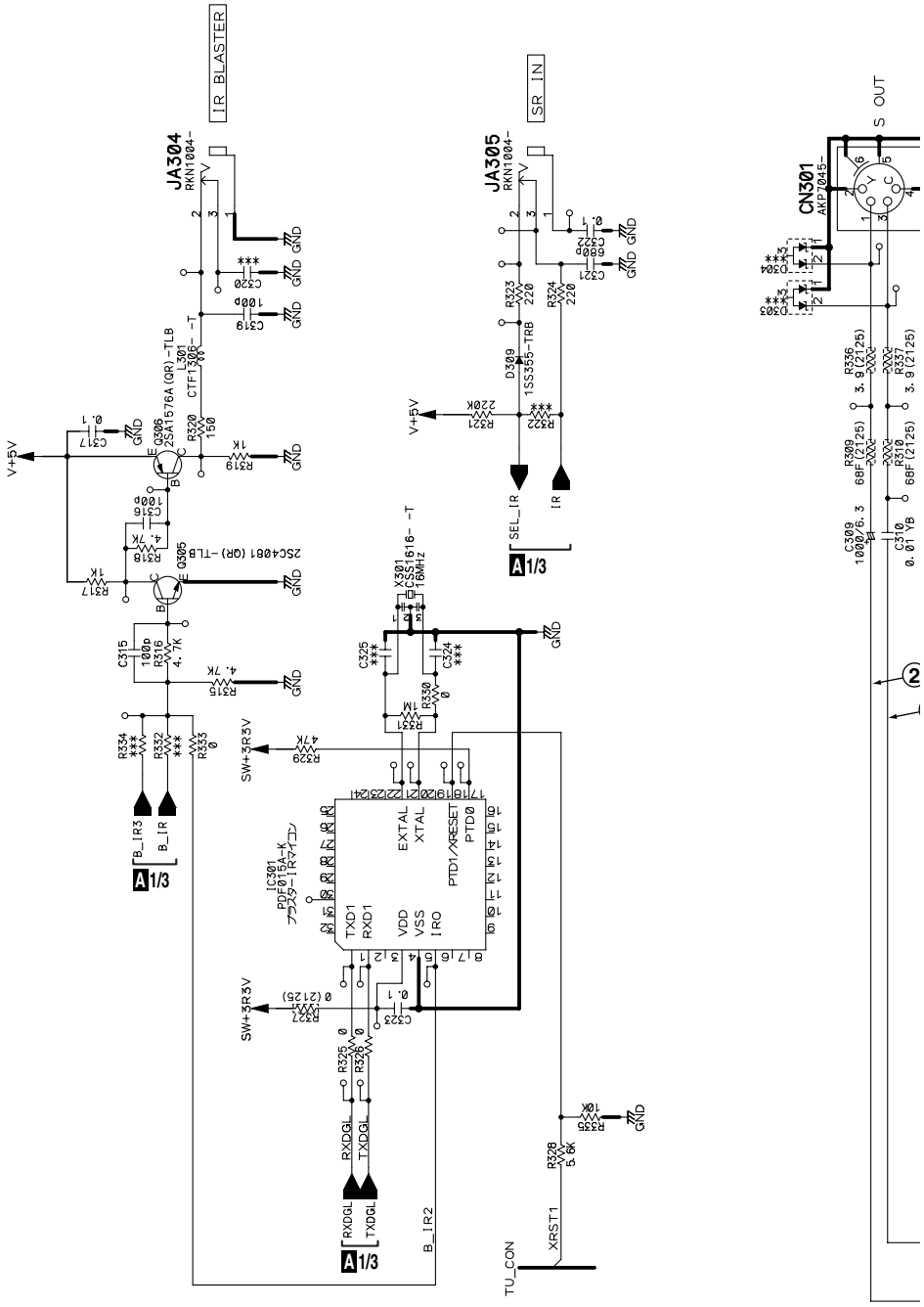
RN4903



A 2/3 JACB ASSY (VWV2230)

Large size SCH diagram

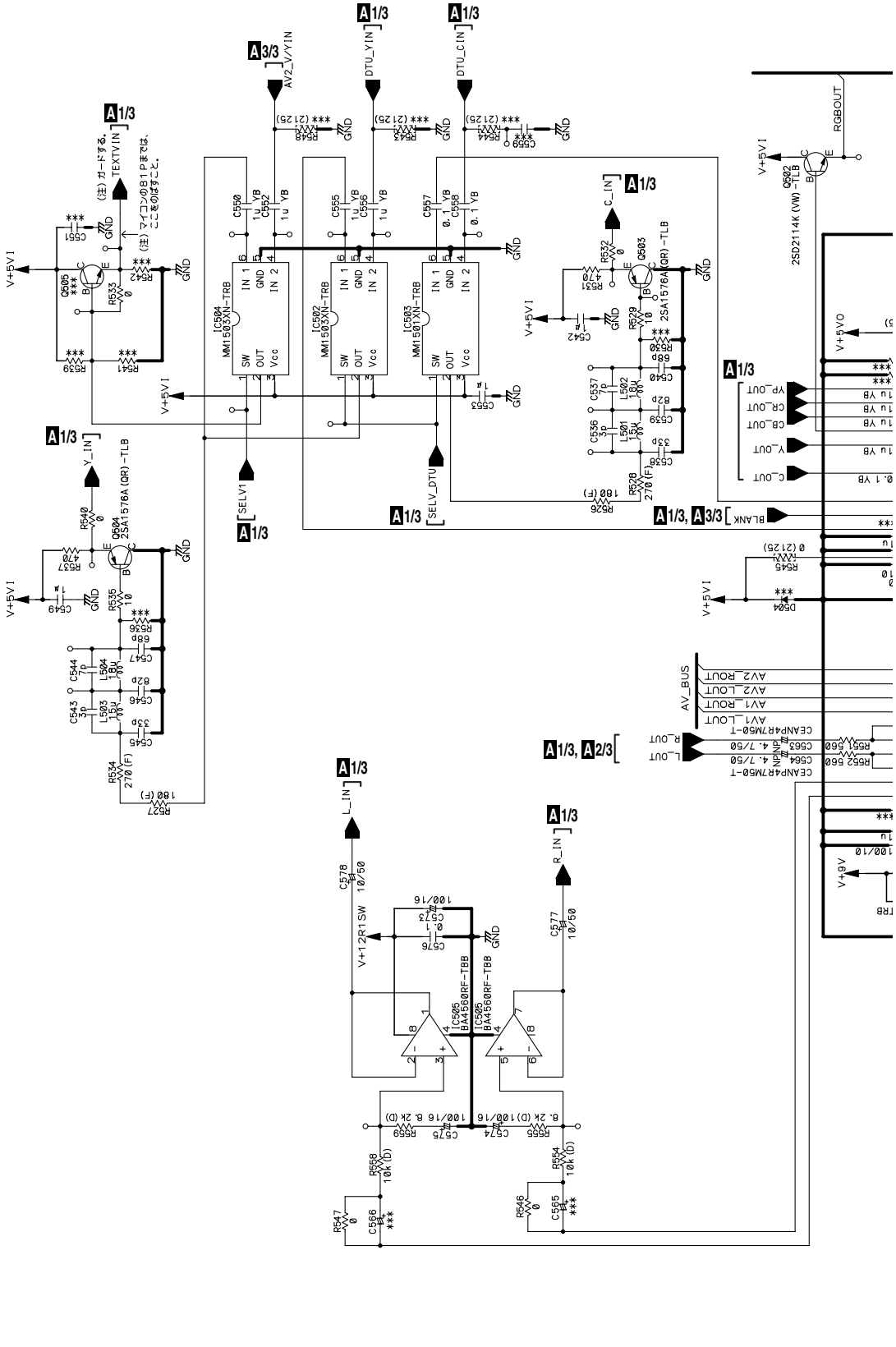




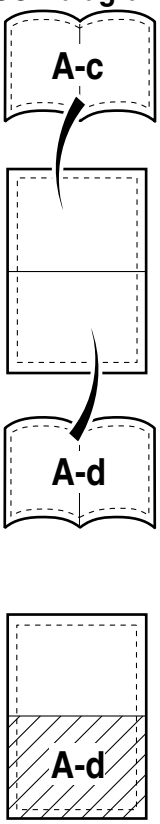
A-c 2/3

S OUT
CN3301
AKP7045-
COMPONENT OUT
JA3302
VKB1233-
Y
CB
CR
OUTPUT 1
V
L
R
KN103
KN104
KN101
KN102
VNF1084- -T
GND
GND_A
R391
***
C307
C306
47Op
D305
D306
D307
D308
R336
R337
R339
R340
R341
R338
R331
R307
R308
R309
R310
R312
R313
R314
C309
C310
C311
C312
C313
C314
1000/6.3
0.01 YB
470/6.3
2SD2114K (VW) -TLB
Q303
Q304
R303
R305
R306
R304
R301
R302
C305
C306
47/16
Q301
C301
220/6.3
C302
V+5V
D301
1SS355-TRB
DTA124EUA-TLB
Q302
D302
DTC124EUA-TLB
C304
C303
22
L_OUT
AMUTE2
AMUTE1
R_OUT
A1/3, A2/3
A1/3
A1/3, A2/2
RN4903
UMF21N
UMB1N (R1=R2=22k)
VC
C B2 E2
E B C2

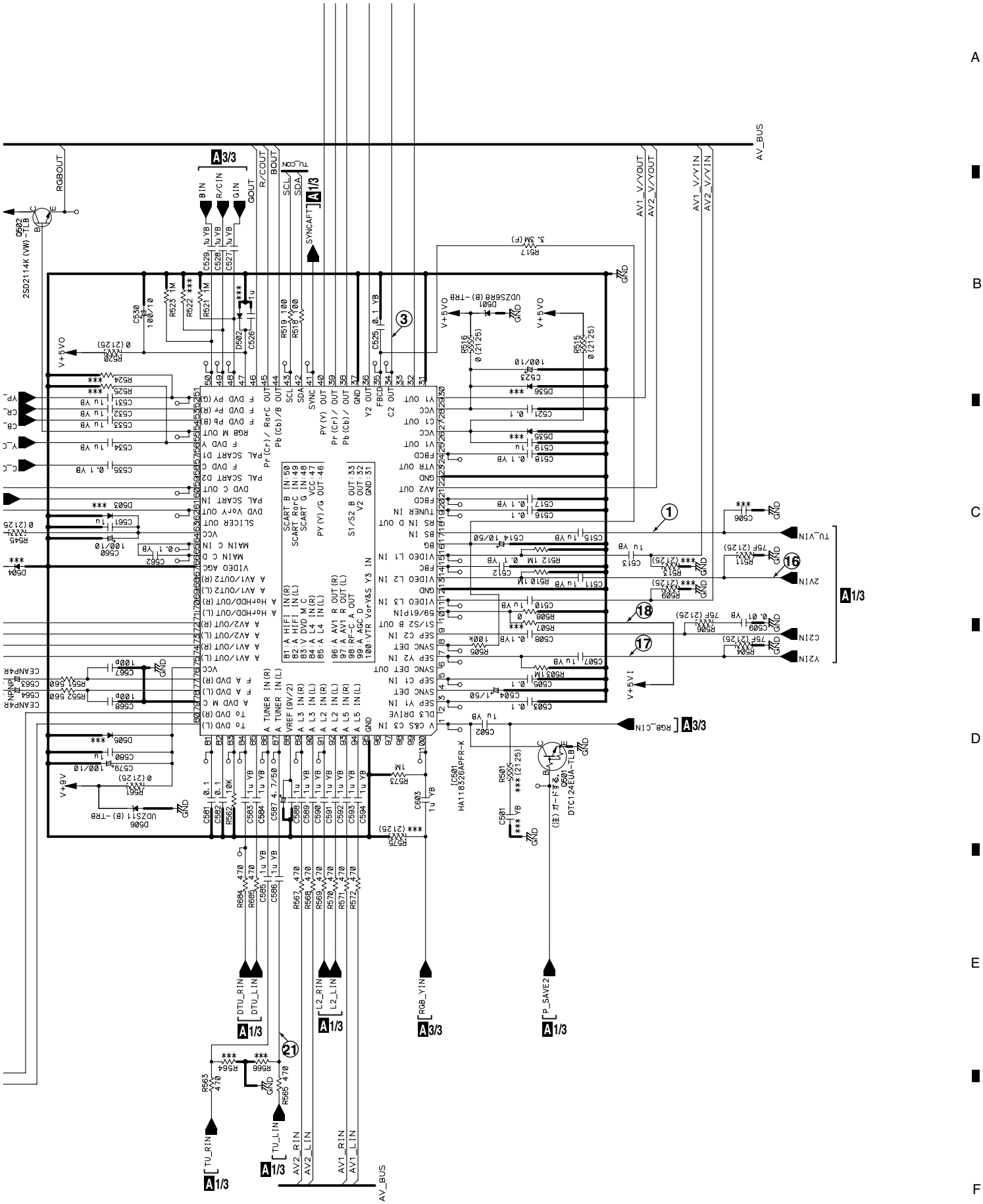
A 2/3 JACB ASSY (VWV2230)



Large size SCH diagram

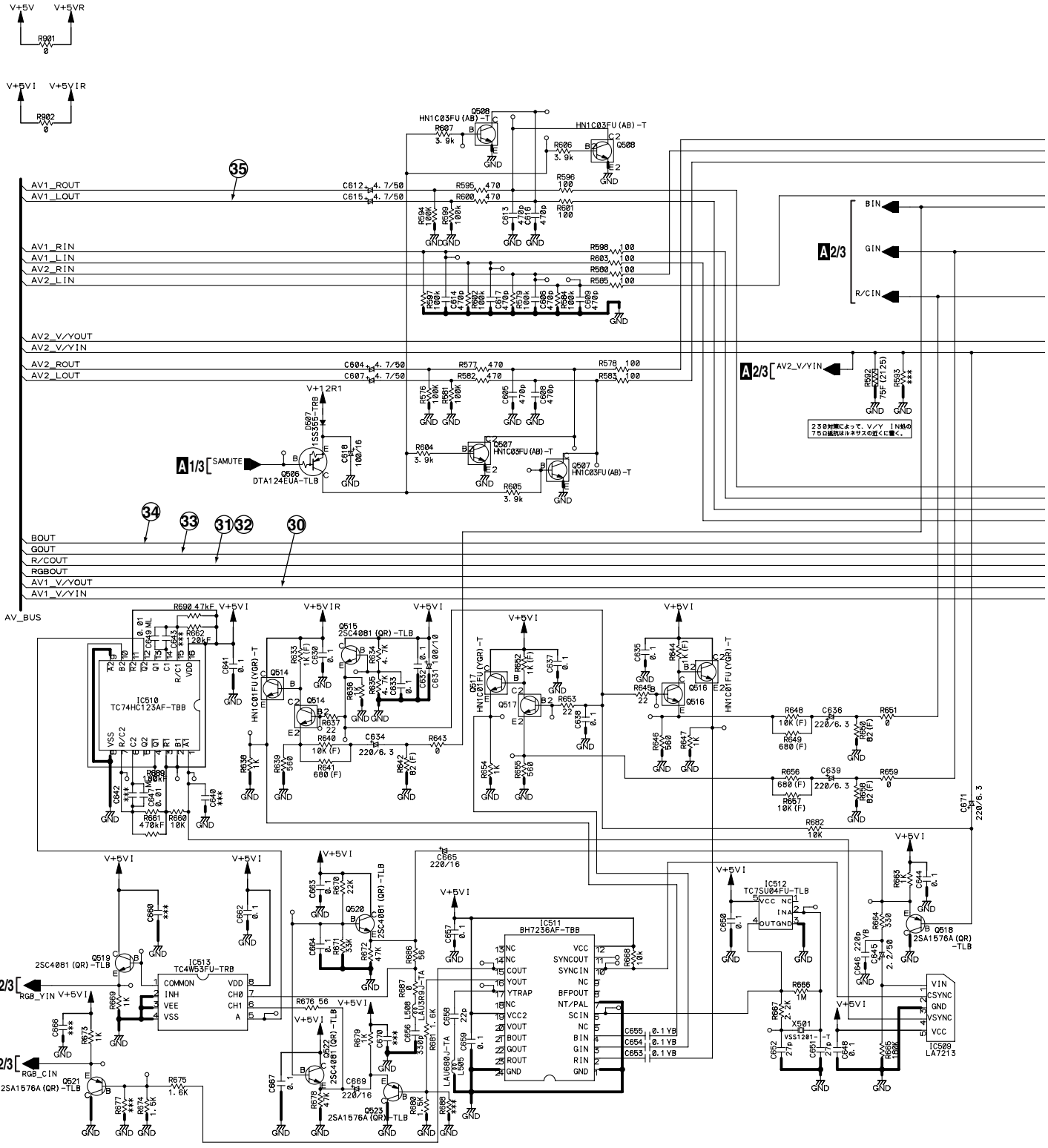


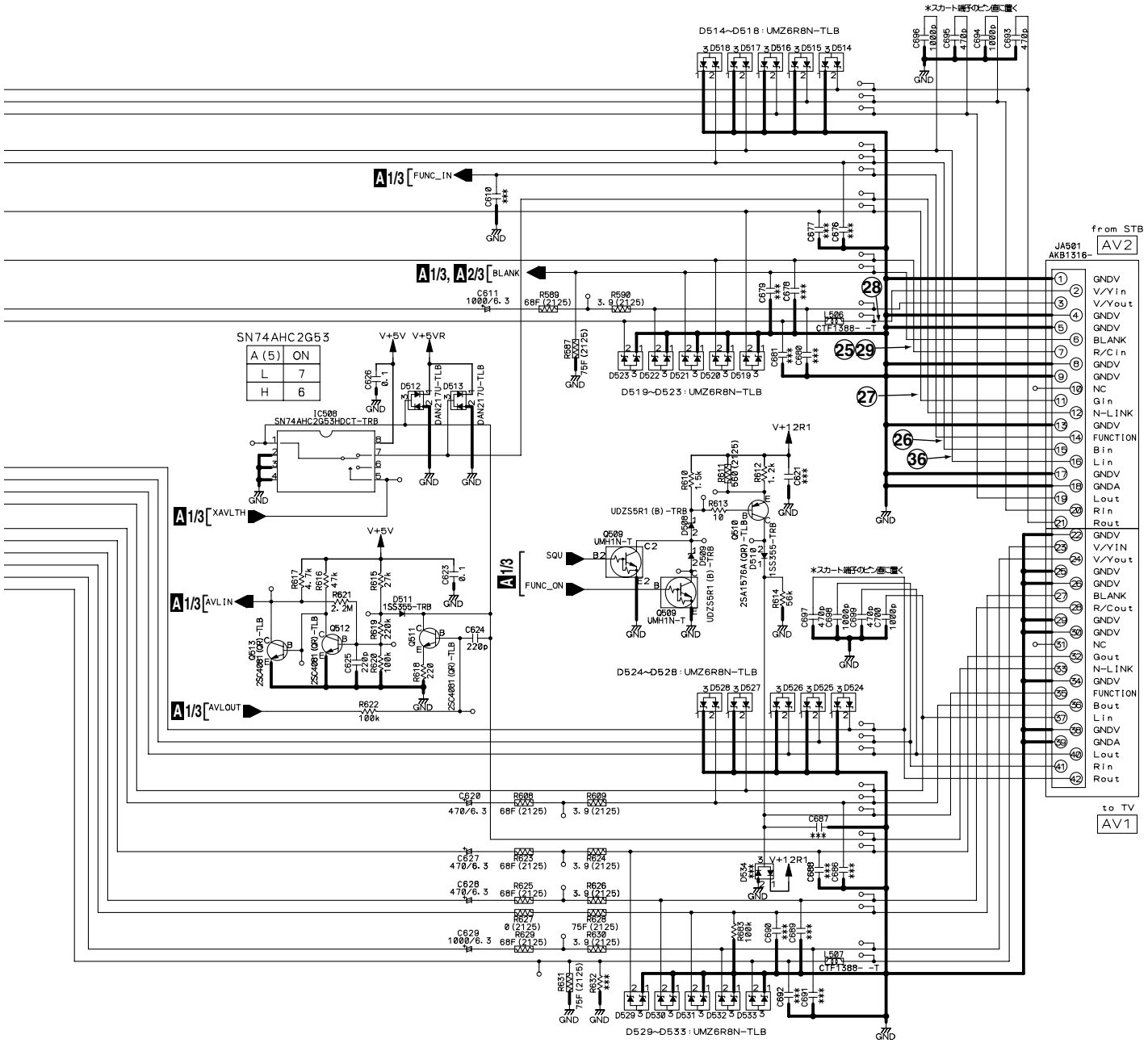
A-d 2/3



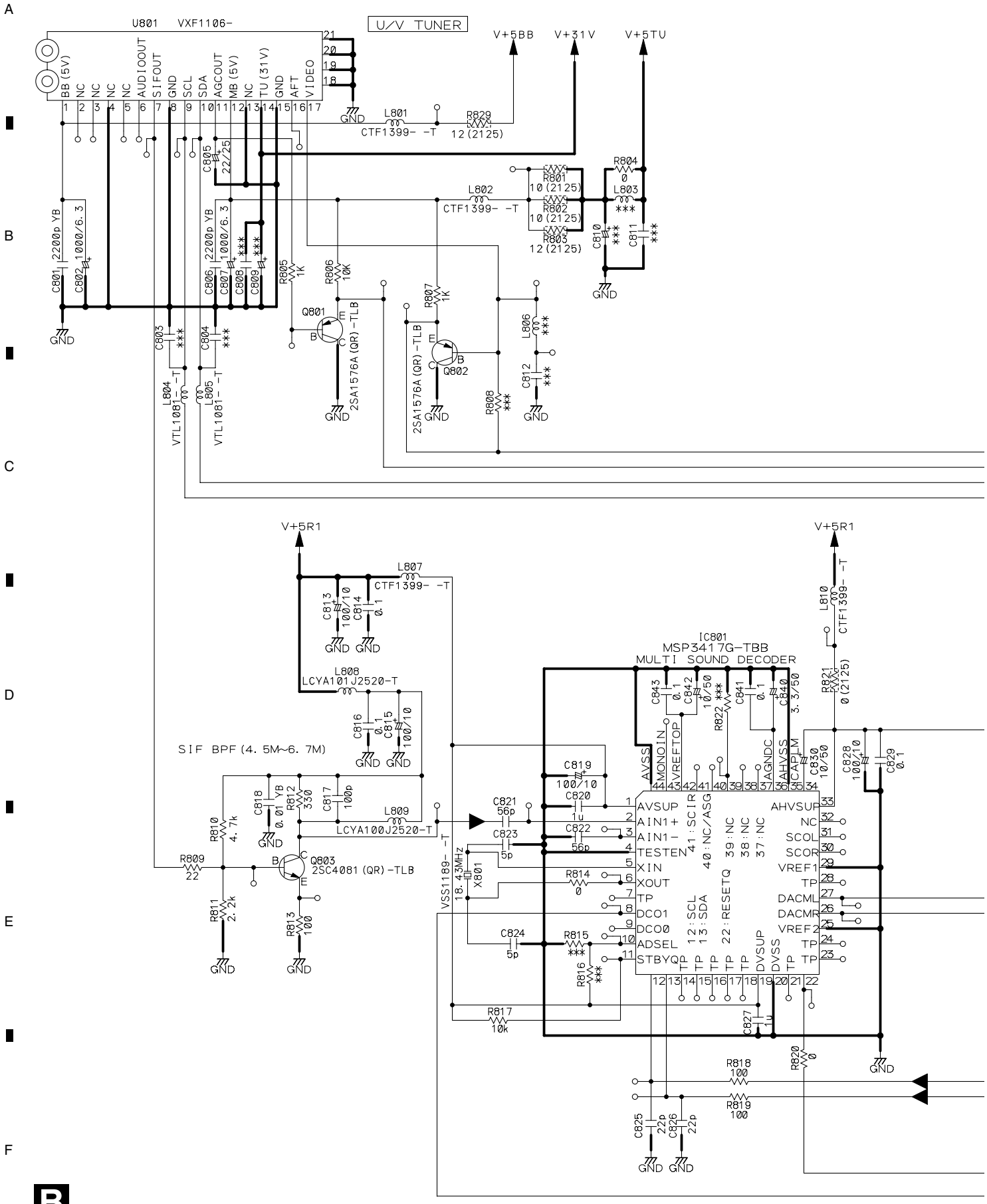
3.5 JACB ASSY (3/3)

A 3/3 JACB ASSY (VWV2230)

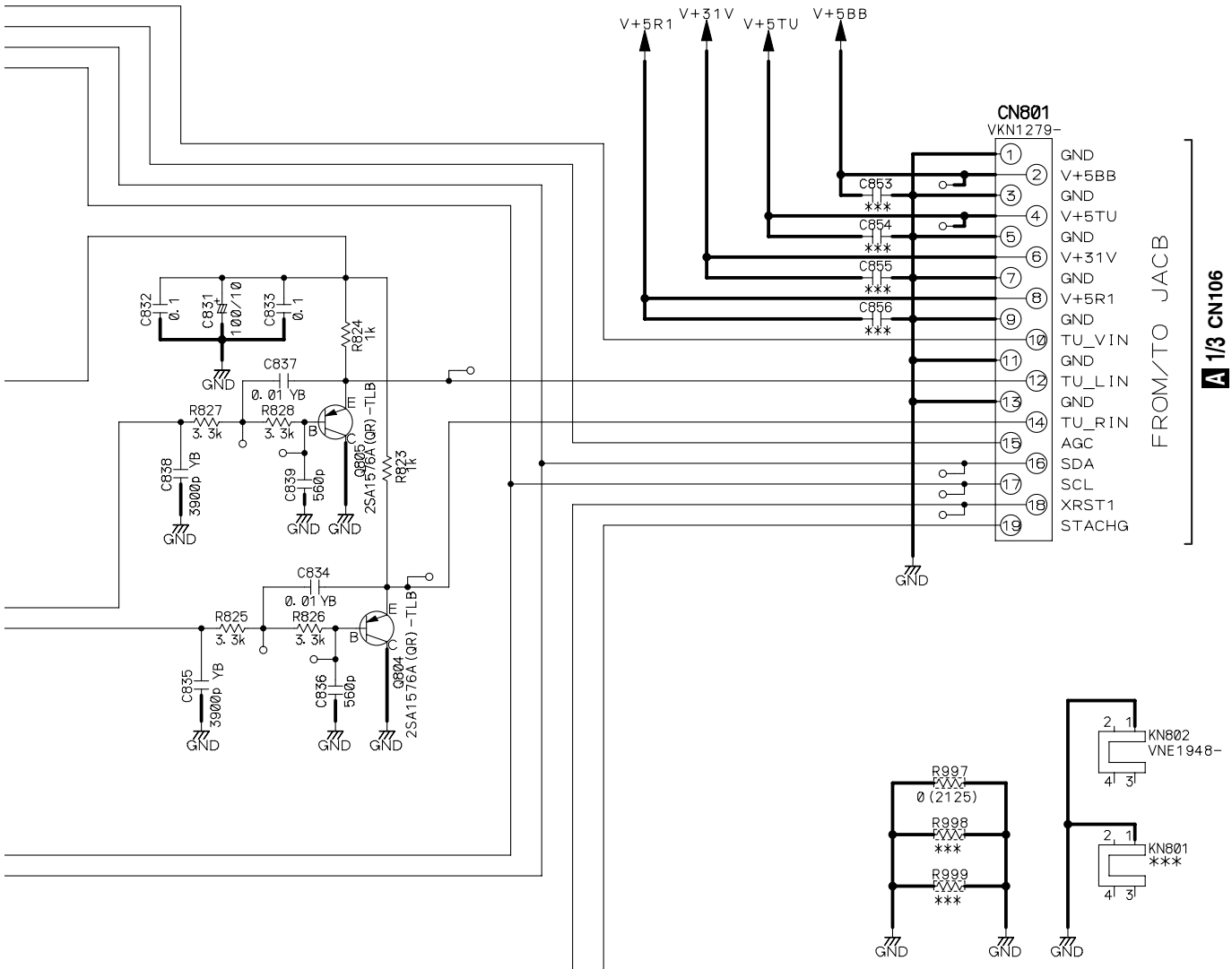



D514~D518 : UMZ6R8N-TLB
D519~D523 : UMZ6R8N-TLB
D524~D528 : UMZ6R8N-TLB
D529~D533 : UMZ6R8N-TLB
A1/3 [FUNC_IN
A1/3, A2/3 [BLANK
A1/3 [XAVLTH
A1/3 [AVLIN
A1/3 [AVLOUT
A1/3 [FUNC_ON
SQU
SN74AHC2G53
IC508 SN74AHC2G53HDCT-TRB
V+5V
V+5VR
V+12R1
from STB
AV2
JA501 AKB1316-
to TV
AV1
GNDV
V/Yin
V/Yout
BLANK
R/Cin
NC
Gin
N-LINK
FUNCTION
Bin
Lin
GNDA
Lout
Rin
Rout
R/Cout
Gout
Bout
*スカート端子のとき取り付く
L506 CTF1388- -T
L507 CTF1388- -T

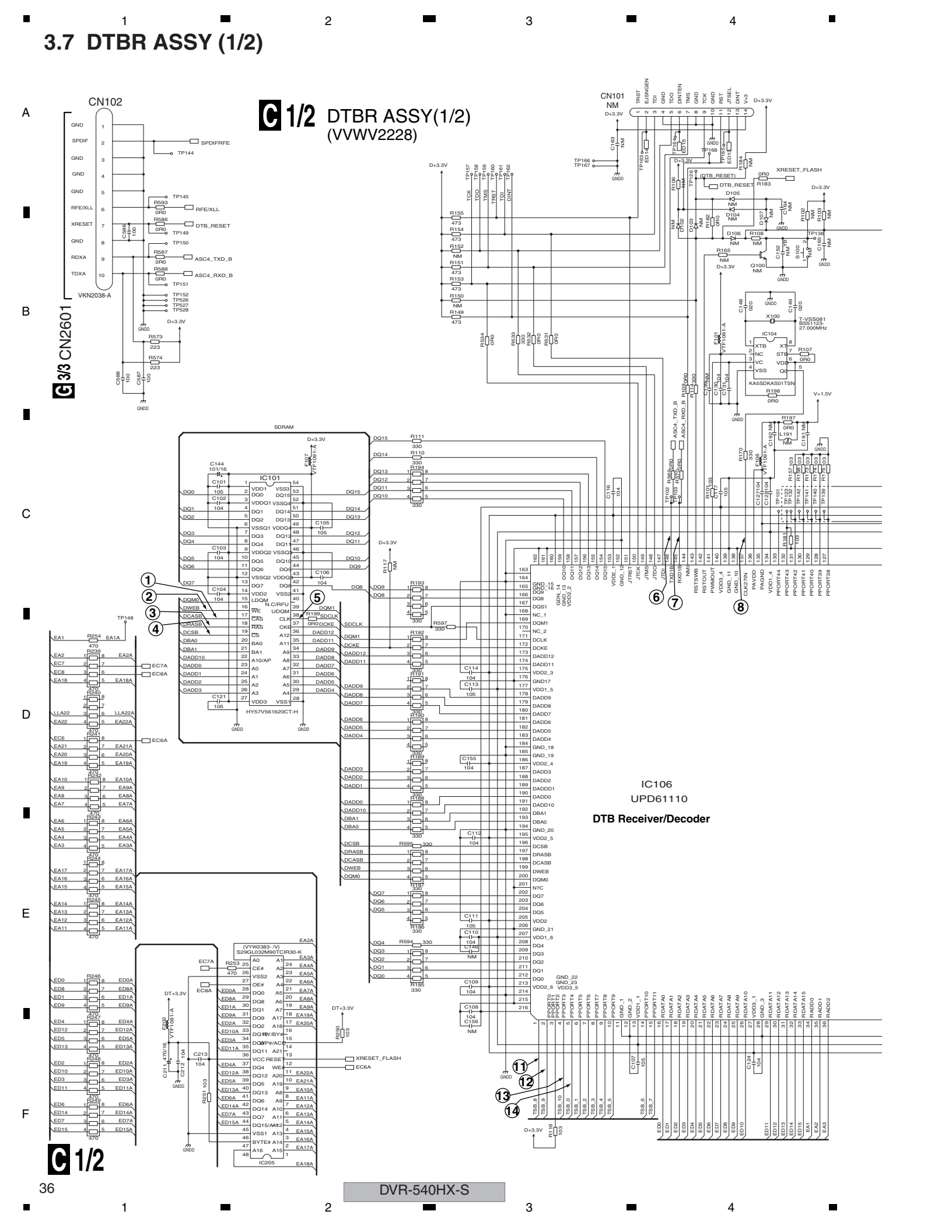
3.6 TUNB ASSY

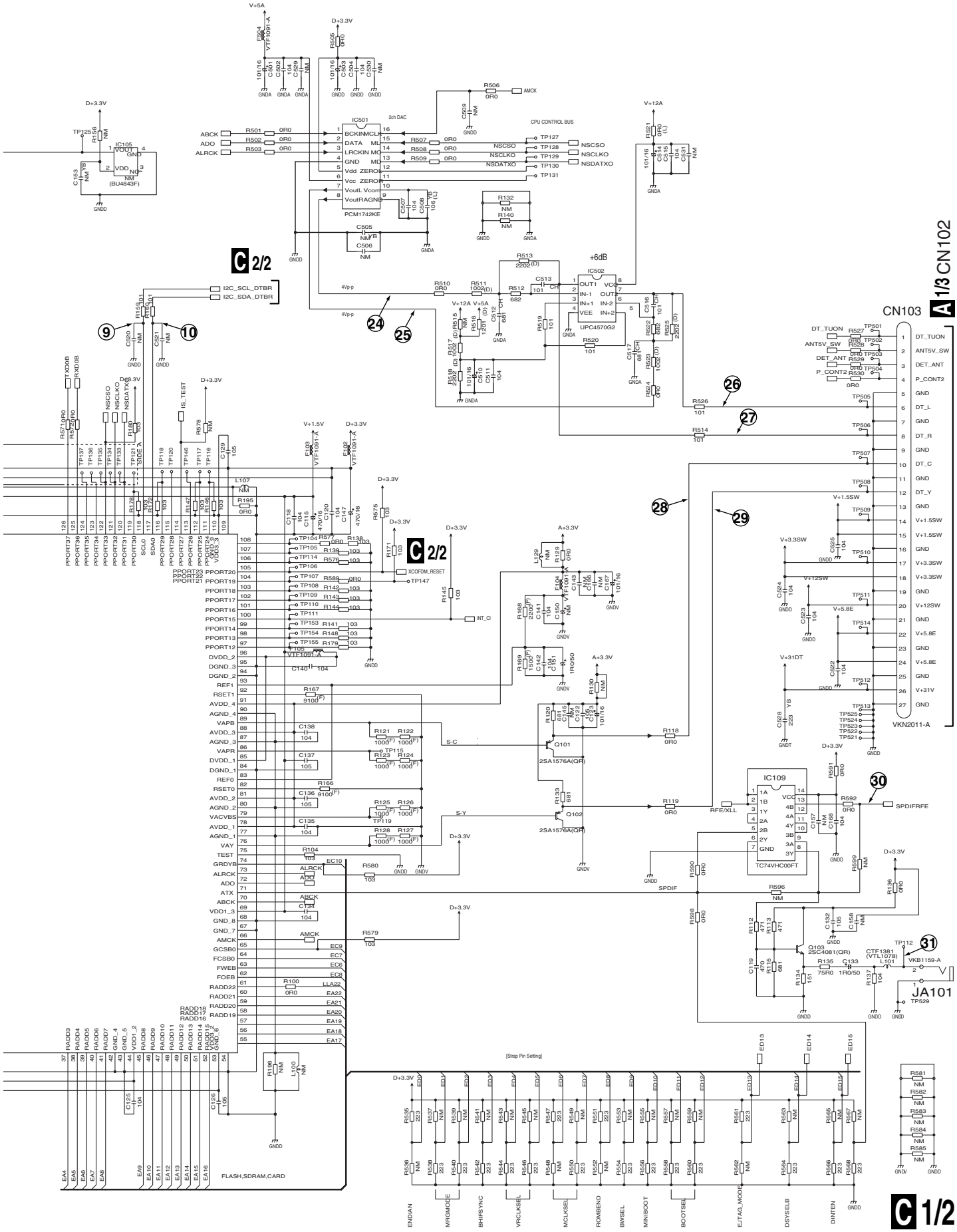

U801 VXF1106-
U/V TUNER
V+5BB
V+31V
V+5TU
BB (5V)
NC
AUDIOOUT
SIFOUT
GND
SCL
SDA
AGCOUT
MB (5V)
TU (31V)
AFT
VIDEO
L801 CTF1399- -T
R829 12(2125)
L802 CTF1399- -T
R801 10(2125)
R802 10(2125)
R803 12(2125)
R804 0
L803 ***
C805 22/25
C801 2200p YB
C802 1000/6.3
C806 2200p YB
C807 1000/6.3
C808 ***
C809 ***
C810 ***
C811 ***
R805 1K
R806 10K
R807 1K
Q801 2SA1576A(QR)-TLB
Q802 2SA1576A(QR)-TLB
L806 ***
C812 ***
R808 ***
C803 ***
C804 ***
L804 VTL1008I- -T
L805 VTL1008I- -T
V+5R1
L807 CTF1399- -T
C813 100/10
C814 0.1
L808 LCYA101J2520-T
C816 0.1
C815 100/10
SIF BPF (4.5M~6.7M)
C818 0.01 YB
R812 330
C817 100p
L809 LCYA100J2520-T
R810 4.7k
R809 22
Q803 2SC4081(QR)-TLB
R811 2.2k
R813 100
C821 56p
C823 5p
C824 5p
X801 18.43MHz
VSS1189- -T
R814 0
R815 ***
R816 ***
R817 10k
IC801
MSP3417G-TBB
MULTI SOUND DECODER
AVSUP
AIN1+
AIN1-
TESTEN
XIN
XOUT
TP
DCO1
DCO0
ADSEL
STBYQP
AVSS
MONOIN
VREFTOP
AGNDC
AHVSS
CAPLM
AHVSUP
NC
SCOL
SCOR
VREF1
TP
DACML
DACMR
VREF2
DVSUP
DVSS
41:SCIR
40:NC/ASG
39:NC
38:NC
37:NC
13:SDA
12:SCL
22:RESETQ
C819 100/10
C820 1u
C822 56p
C843 0.1
C842 10/50
C841 0.1
C840 3.3/50
R822 ***
R821 0(2125)
C830 10/50
C828 100/10
C829 0.1
C827 1u
R820 0
R818 100
R819 100
C825 22p
C826 22p
L810 CTF1399- -T
GND

B TUNB ASSY (VWV2229)



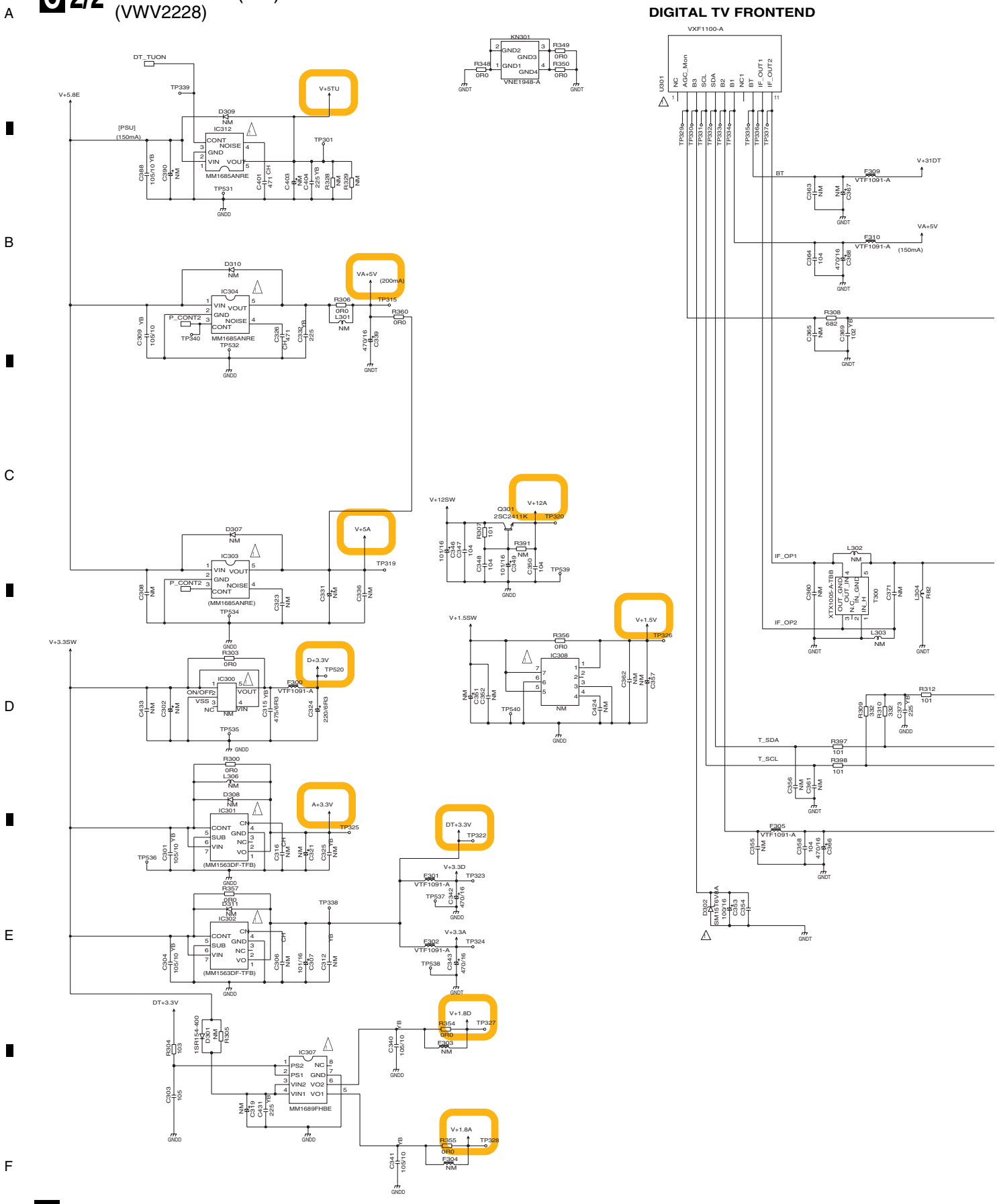
3.7 DTBR ASSY (1/2)

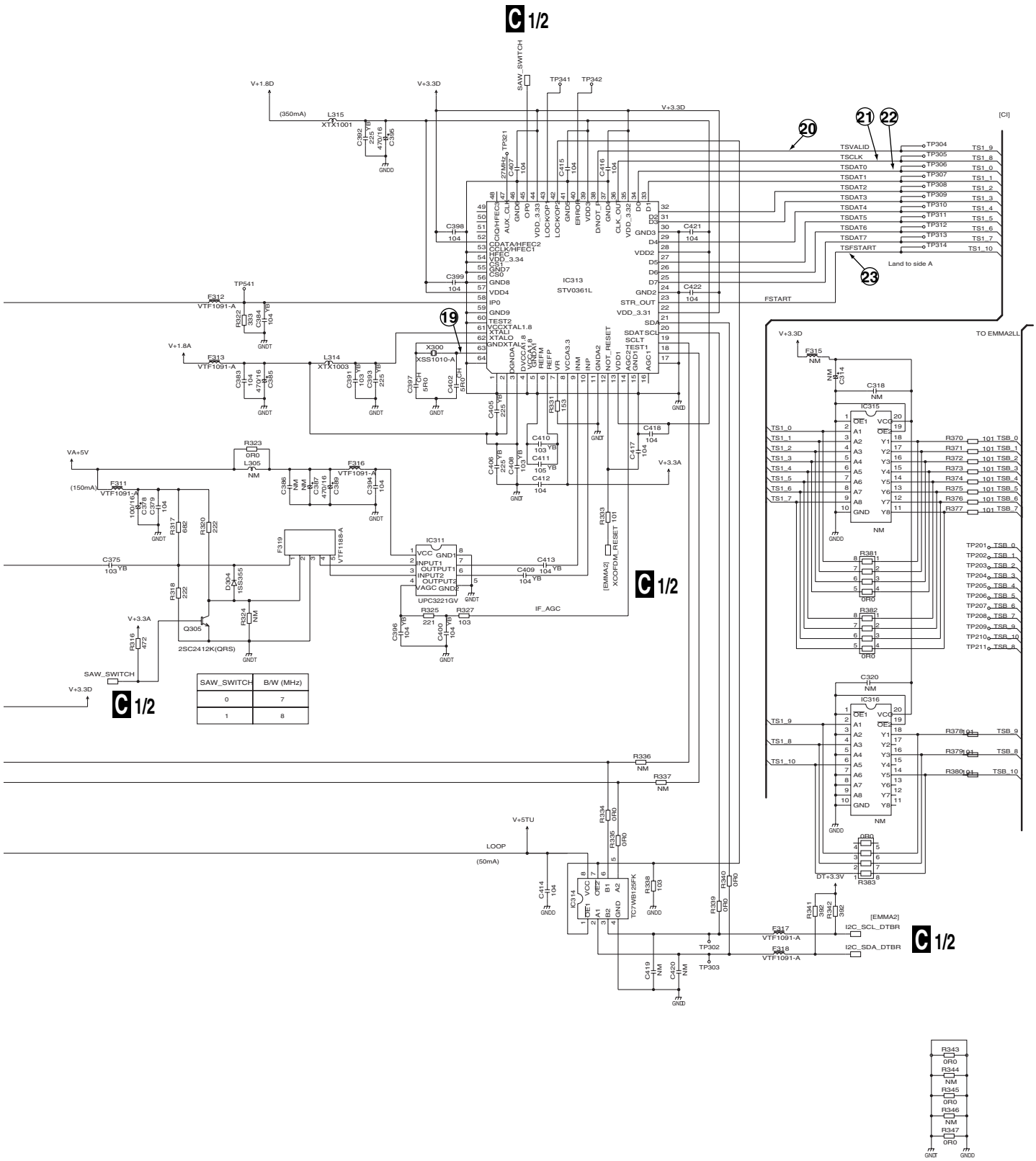



C 2/2
C 2/2
A 1/3 CN102
CN103
VKN2011-A
C 1/2
IC501
PCM1742KE
IC502
UPC4570G2
IC109
TC74VHC00FT
IC105
(BU4843F)
JA101
FLASH,SDRAM,CARD
DVR-540HX-S
37

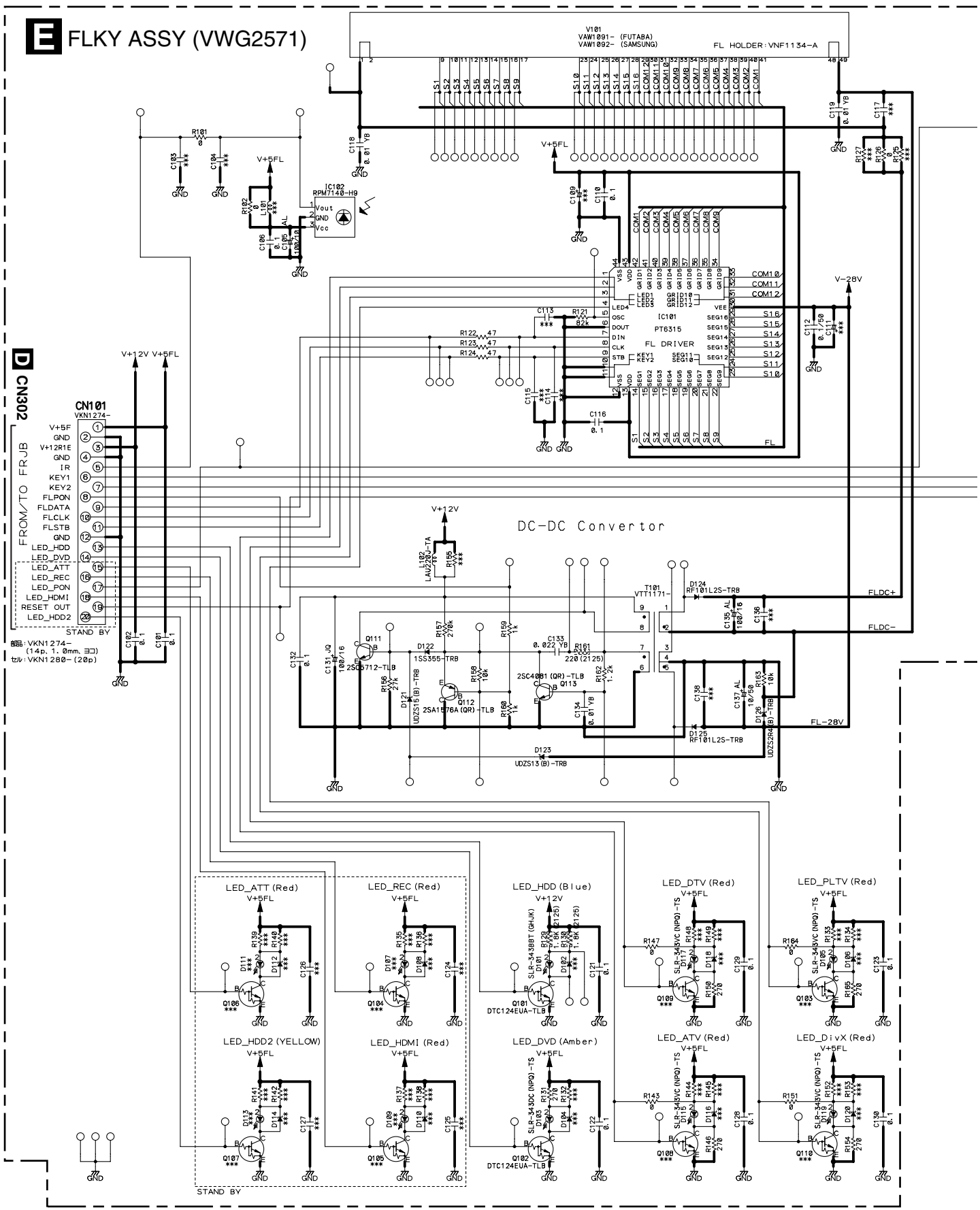
3.8 DTBR ASSY (2/2)

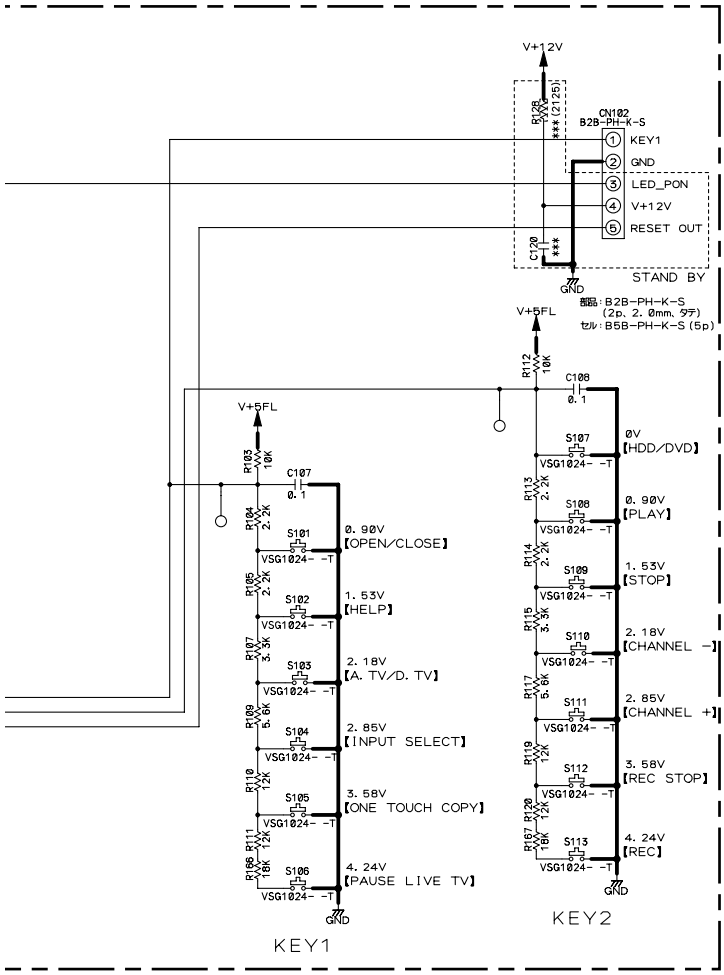
C 2/2 DTBR ASSY(2/2) (VWV2228)

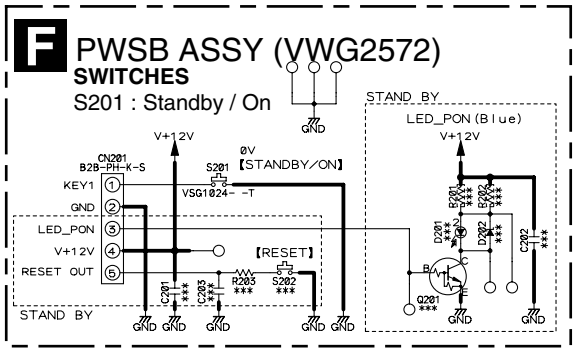



C 1/2
SAW SWITCH
TP341
TP342
V+1.8D
V+3.3D
(350mA)
L315
XTX1001
C382 225 Y5
470/16
C385
GNDD
TP921
27MHz
C407 104
C415 104
C416 104
20
21
22
[CI]
TSVALID
TSCLK
TSDAT0
TSDAT1
TSDAT2
TSDAT3
TSDAT4
TSDAT5
TSDAT6
TSDAT7
TSFSTART
TP304
TP305
TP306
TP307
TP308
TP309
TP310
TP311
TP312
TP313
TP314
TS1_9
TS1_8
TS1_0
TS1_1
TS1_2
TS1_3
TS1_4
TS1_5
TS1_6
TS1_7
TS1_10
Land to side A
23
C398 104
C399 104
C421 104
C422 104
IC313
STV0361L
FSTART
STR_OUT
VDD_3.31
SDA
SCL
SDAT
SCLT
TEST1
AGC1
TP541
F312
VTF1091-A
R322 333
C384 104
GNDT
19
V+1.8A
F313
VTF1091-A
L314
XTX1003
C383 104
470/16
C385
C391 103 Y5
C393 225 Y5
X300
XSS1010-A
C397 10CH 5R0
C402 10CH 5R0
C405 225 Y5
R331 153
C418 104
C410 103 YB
C411 105 YB
C412 104
C406 225 YB
C408 103 YB
C417 104
V+3.3A
GNDT
GND
TO EMMA2LL
V+3.3D
F315
NM
C314
C318
NM
IC315
OE1
VCC
A1
OE2
A2
A3
A4
A5
A6
A7
A8
GND
Y1
Y2
Y3
Y4
Y5
Y6
Y7
Y8
TS1_0
TS1_1
TS1_2
TS1_3
TS1_4
TS1_5
TS1_6
TS1_7
R370 101 TSB_0
R371 101 TSB_1
R372 101 TSB_2
R373 101 TSB_3
R374 101 TSB_4
R375 101 TSB_5
R376 101 TSB_6
R377 101 TSB_7
R381
R382
0R0
TP201 TSB_0
TP202 TSB_1
TP203 TSB_2
TP204 TSB_3
TP205 TSB_4
TP206 TSB_5
TP207 TSB_6
TP208 TSB_7
TP209 TSB_9
TP210 TSB_10
TP211 TSB_8
C320
NM
IC316
R378 101 TSB_9
R379 101 TSB_8
R380 101 TSB_10
R383
DT+3.3V
VA+5V
R323 0R0 NM
L305
F311
VTF1091-A
(150mA)
100/16
C378
C379 104
F316
VTF1091-A
C386 NM
C387 NM
C387 470/16
C388
C394 104
R317 682
R320 222
R318 222
D304 1SS355
F319
VTF1188-A
C375 103 YB
IC311
VCC
GND1
INPUT1
OUTPUT1
INPUT2
OUTPUT2
VAGC
GND2
UPC3221GV
C409 104 YB
C413 104 YB
R333 101
[EMMA2]
XCOFDM_RESET
C 1/2
IF_AGC
R325 221
R327 103
C396 104 Y5
C400 104 Y5
V+3.3A
Q305
2SC2412K(QRS)
R316 472
R324 NM
SAW_SWITCH
V+3.3D
SAW_SWITCH
B/W (MHz)
0
7
1
8
C 1/2
R336 NM
R337 NM
V+5TU
LOOP
(50mA)
R334 0R0
R335 0R0
C414 104
IC314
TC7WB125FK
R338 103
R339 0R0
R340 0R0
R341 392
R342 392
[EMMA2]
I2C_SCL_DTBR
I2C_SDA_DTBR
C 1/2
F317
VTF1091-A
F318
VTF1091-A
TP302
TP303
C419 NM
C420 NM
R343 0R0
R344 NM
R345 0R0
R346 NM
R347 0R0
C 2/2

3.9 FRJB, FLKY and PWSB ASSYS

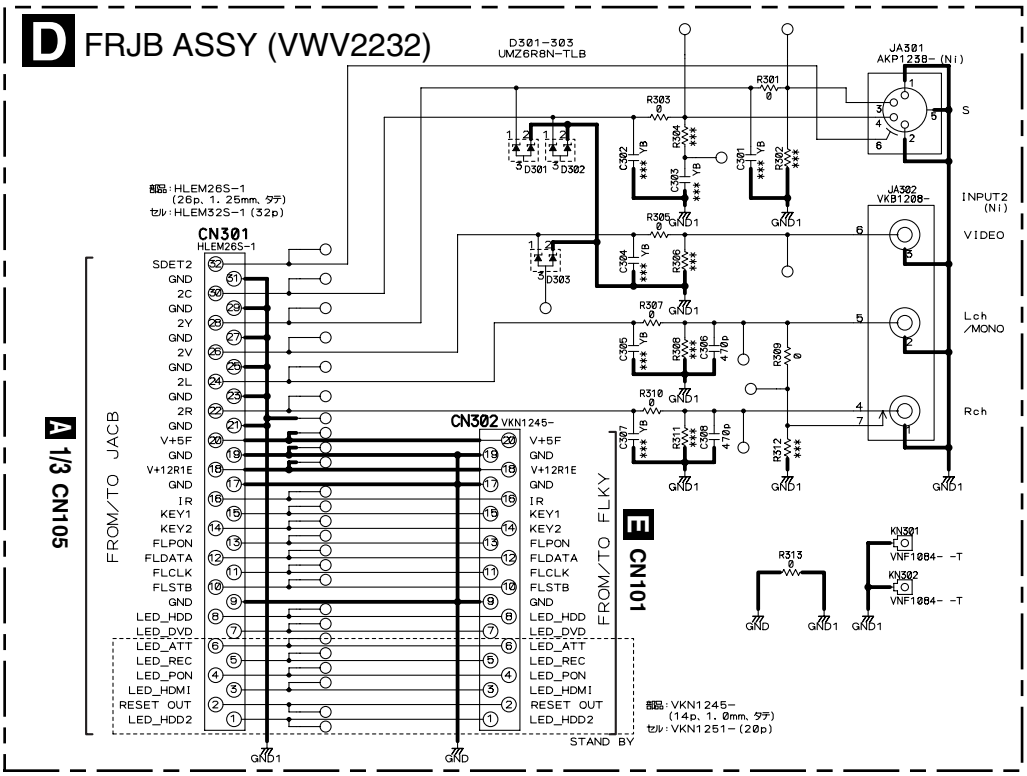






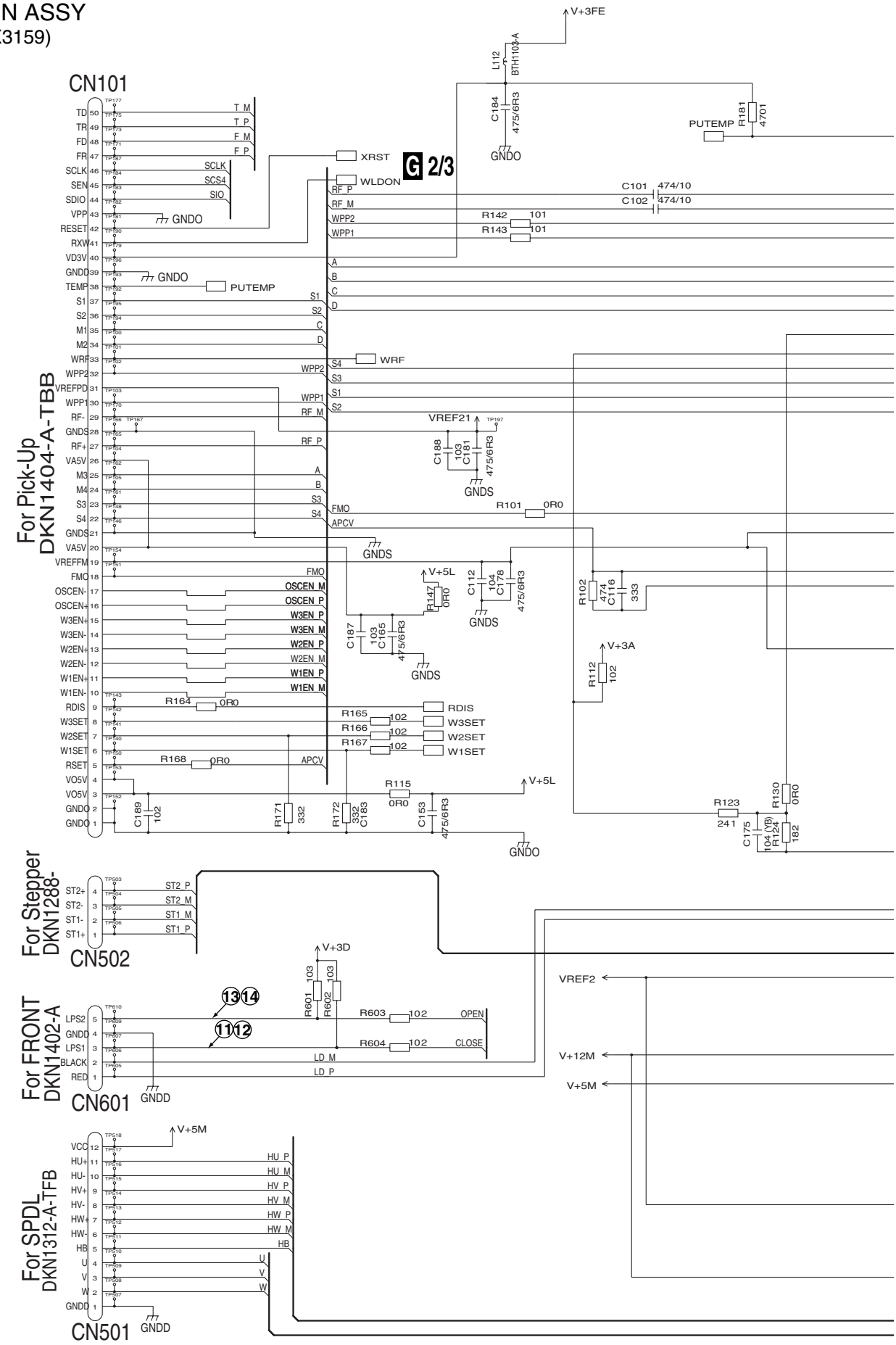
SWITCHES

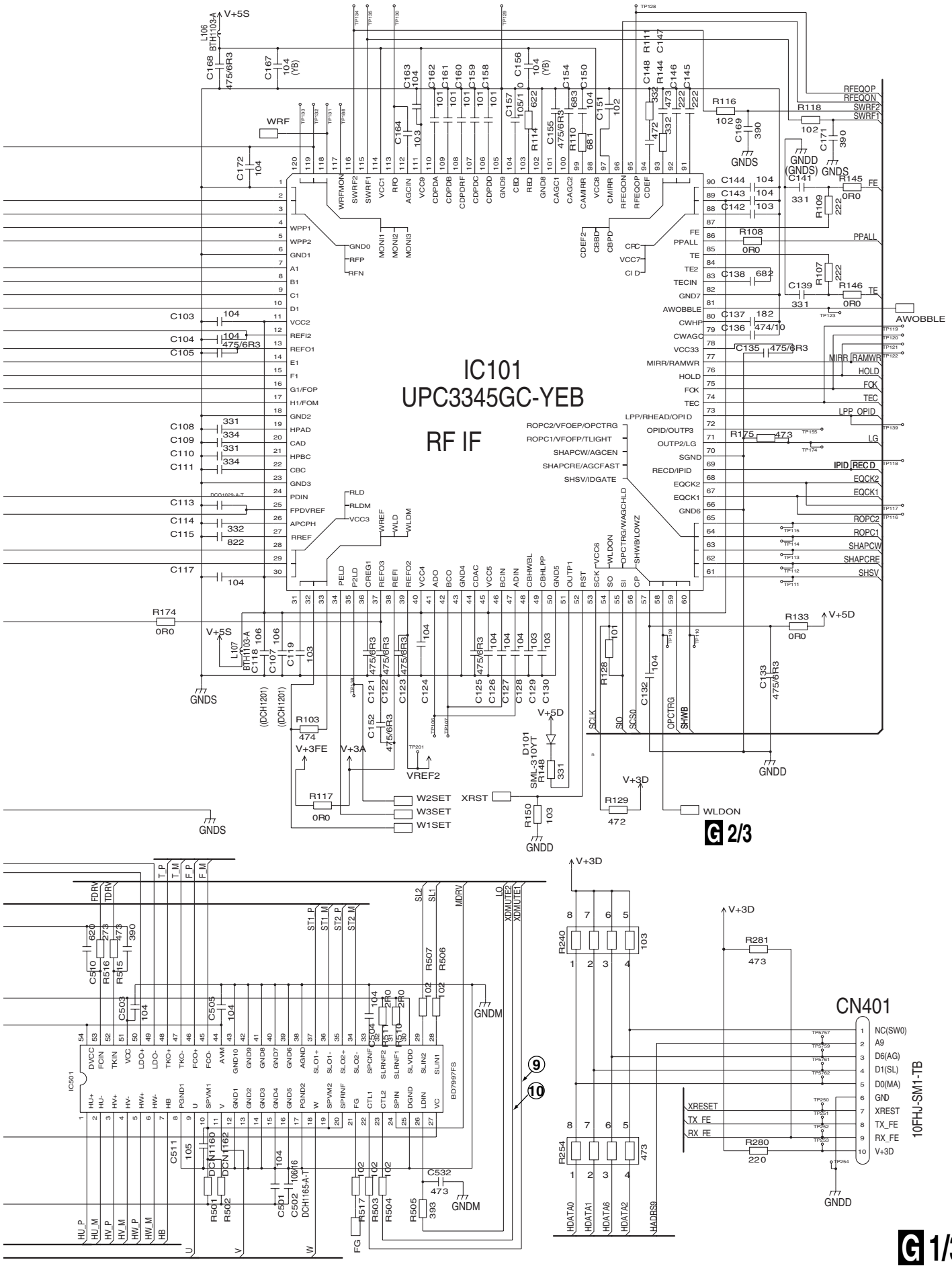
S101 : Open / Close
S102 : Help
S103 : A.TV/D.TV
S104 : Input Select
S105 : One Touch Copy
S106 : pause Live TV
S107 : HDD / DVD
S108 : Play
S109 : Stop
S110 : Channel –
S111 : Channel +
S112 : REC Stop
S113 : REC



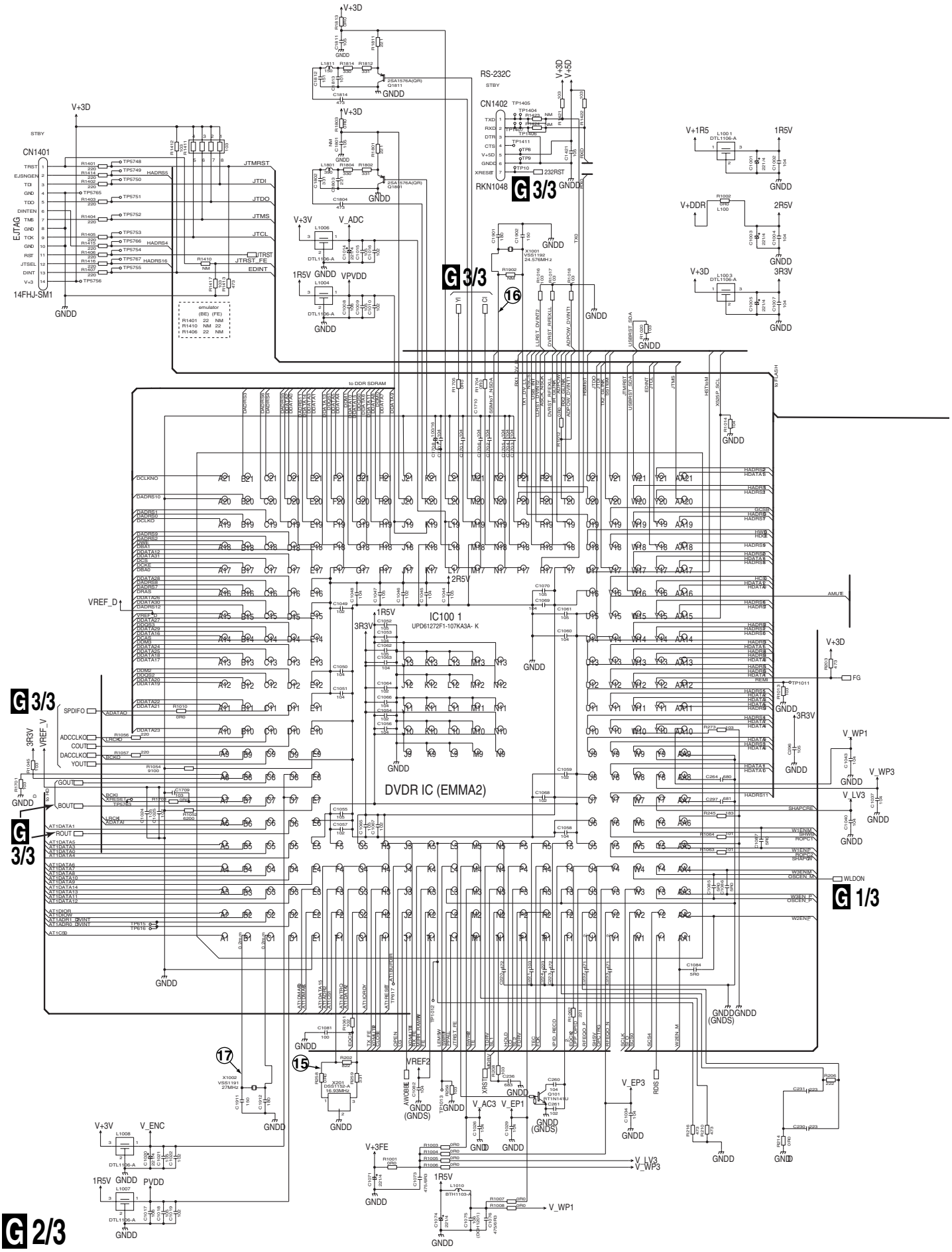
3.10 MAIN ASSY(1/3)

G 1/3 MAIN ASSY
(VXX3159)

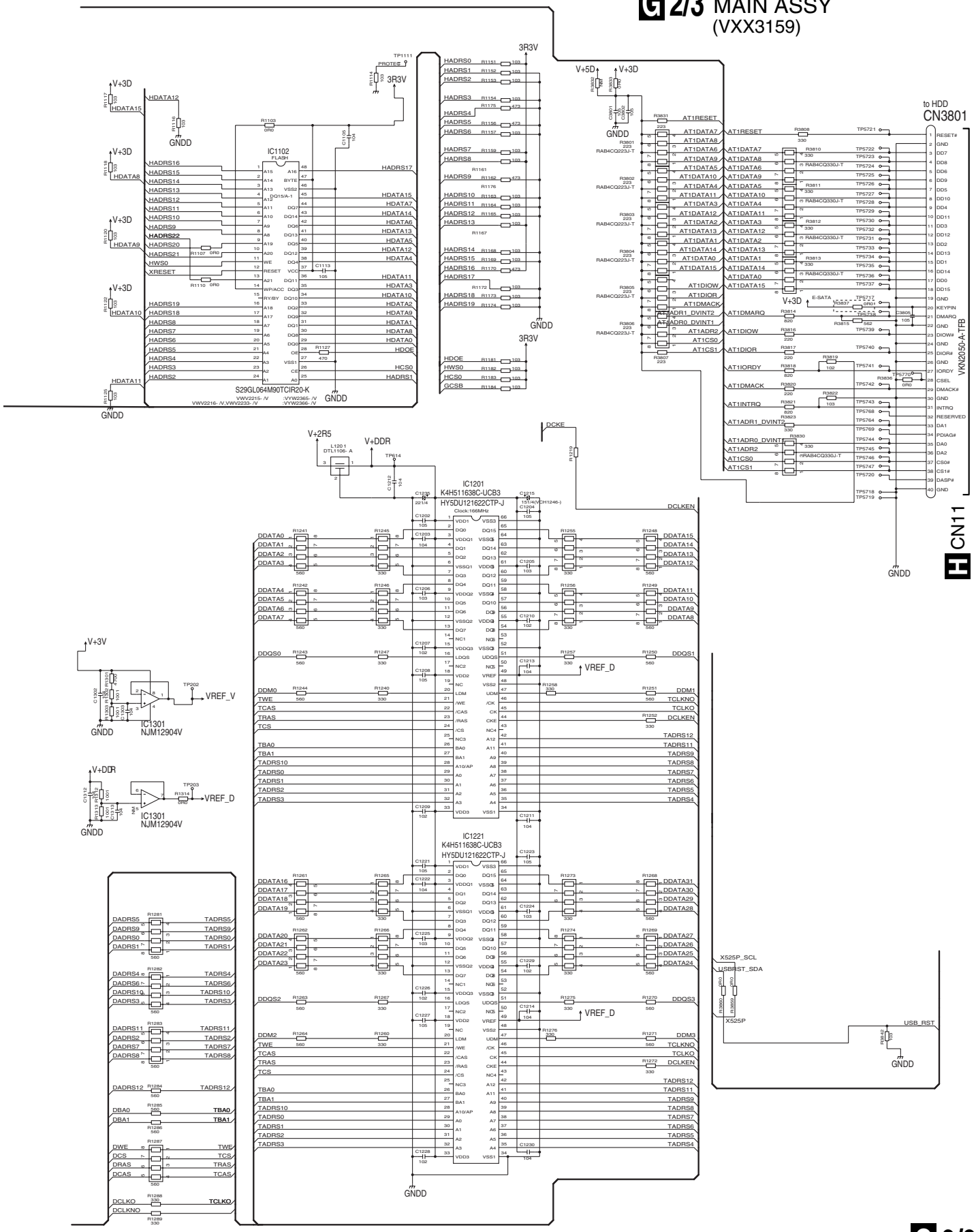



IC101
UPC3345GC-YEB
RF IF
G 2/3
G 1/3
CN401
10FHJ-SM1-TB
IC501
BD7997FS
DCH1165A-T
DCH1201
DCG1029-A-T
WRF
AWOBBLE
WLDON
VREF2
W2SET
W3SET
W1SET
XRST
GNDS
GNDD
GNDM
V+5S
V+5D
V+3D
V+3A
V+3FE
RFEQOP
RFEQON
SWRF2
SWRF1
FE
PPALL
TE
TE2
TECIN
AWOBBLE
CWHP
CWAGC
VCC33
MIRR/RAMWR
HOLD
FOK
TEC
LPP/RHEAD/OPID
OPID/OUTP3
OUTP2/LG
SGND
RECD/IPID
EQCK2
EQCK1
GND6
ROPC2/VFOEP/OPCTRG
ROPC1/VFOFP/TLIGHT
SHAPCW/AGCEN
SHAPCRE/AGCFAST
SHSV/IDGATE
LG
IPID
RECD
ROPC2
ROPC1
SHAPCW
SHAPCRE
SHSV
SCLK
SIO
SCS0
OPCTRG
SHWB
XRESET
TX_FE
RX_FE
HDATA0
HDATA1
HDATA6
HDATA2
HADRS3
HU_P
HU_M
HV_P
HV_M
HW_P
HW_M
HB
FG
MDRV
XDMUTE2
XDMUTE1
SL2
SL1
ST1_P
ST1_M
ST2_P
ST2_M
T_P
T_M
F_P
F_M
FDRV
TDRV

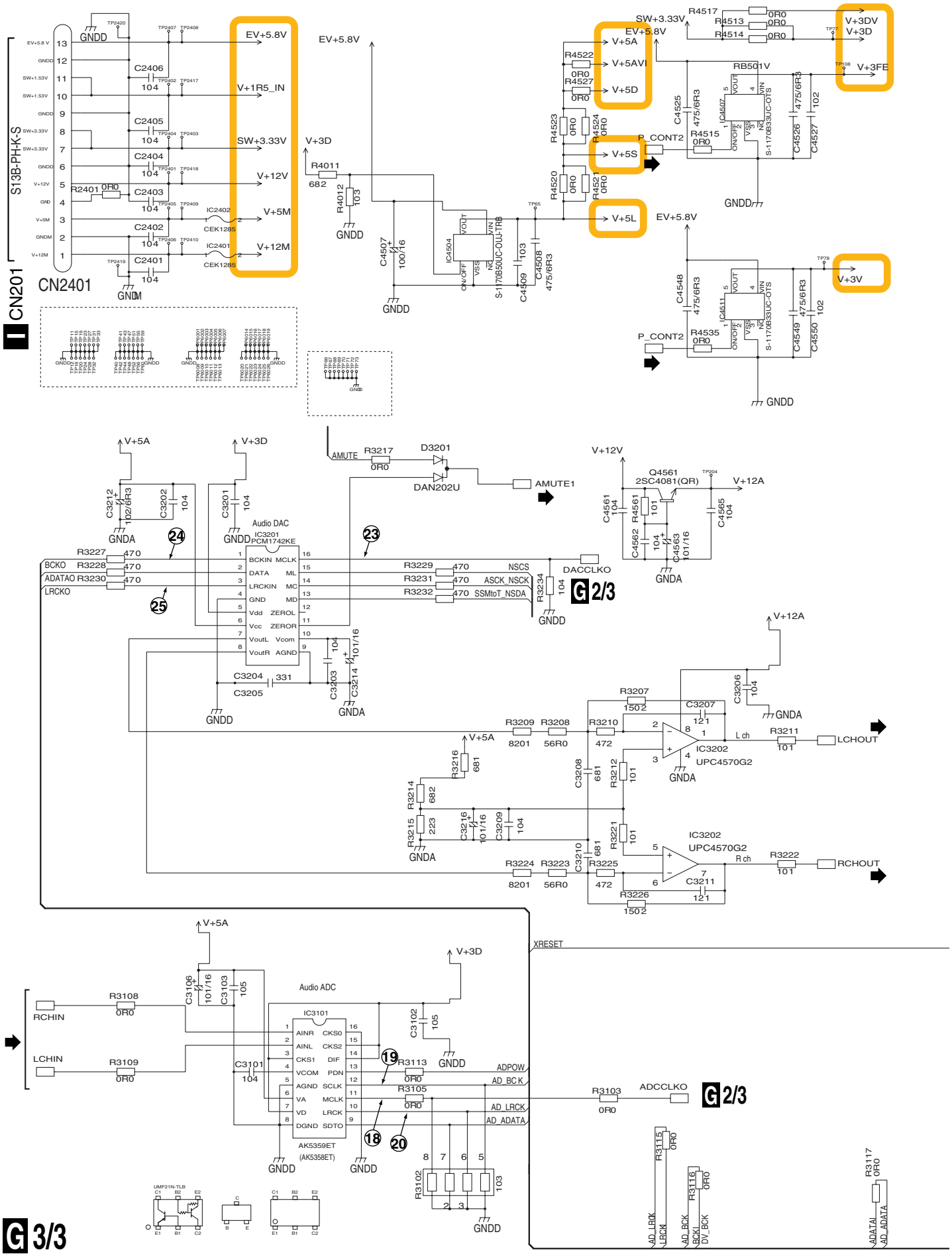
3.11 MAIN ASSY(2/3)



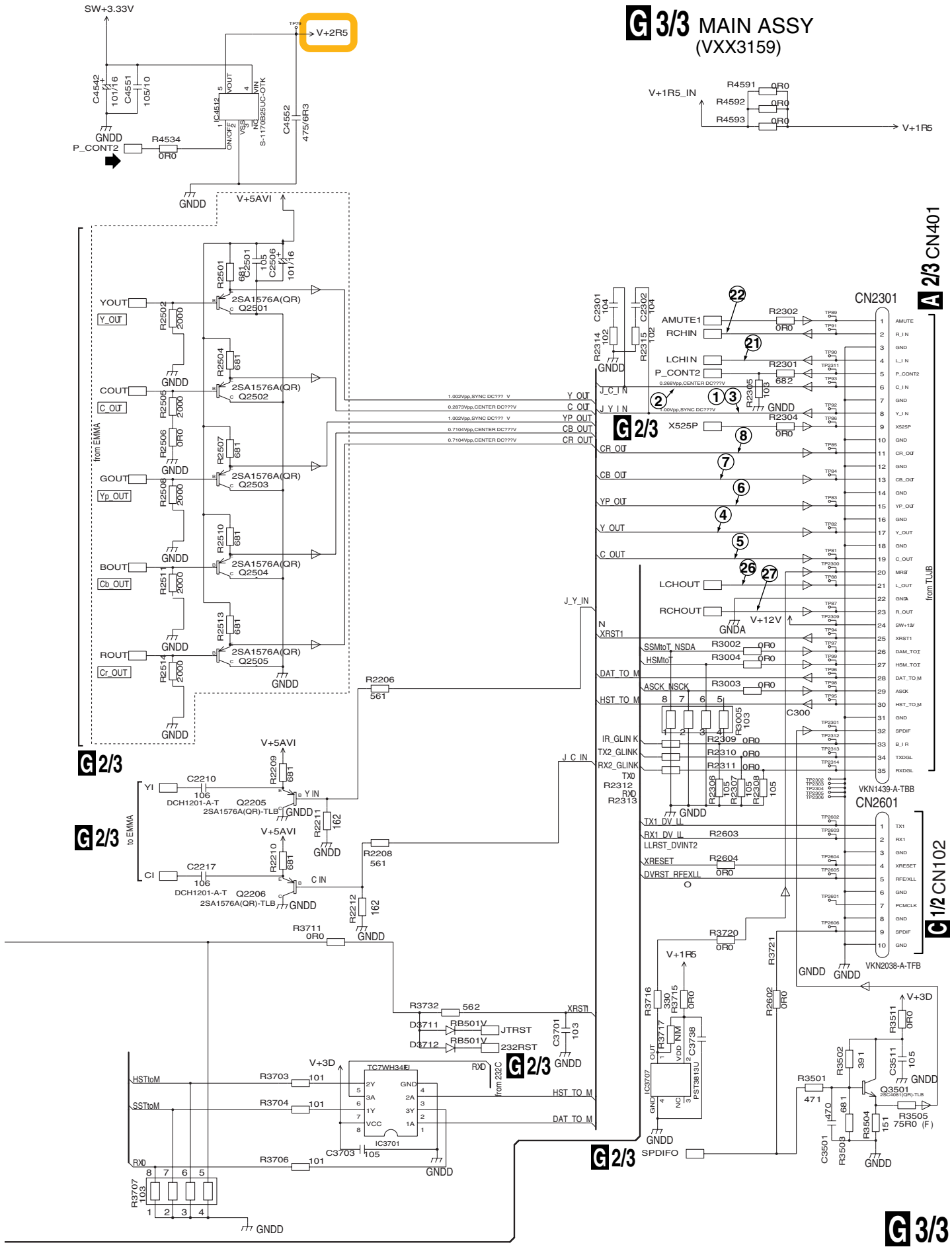
G 2/3 MAIN ASSY (VXX3159)



3.12 MAIN ASSY(3/3)

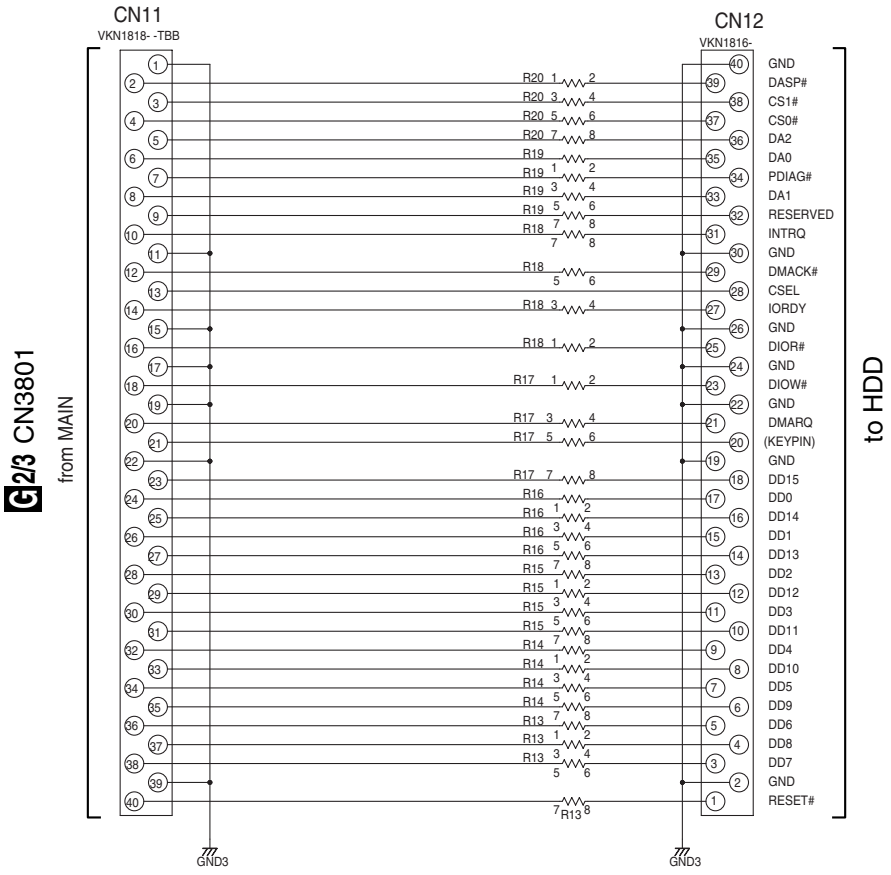


G 3/3 MAIN ASSY (VXX3159)



3.13 ATAB ASSY

H ATAB ASSY (VWV2231)



A

B

C

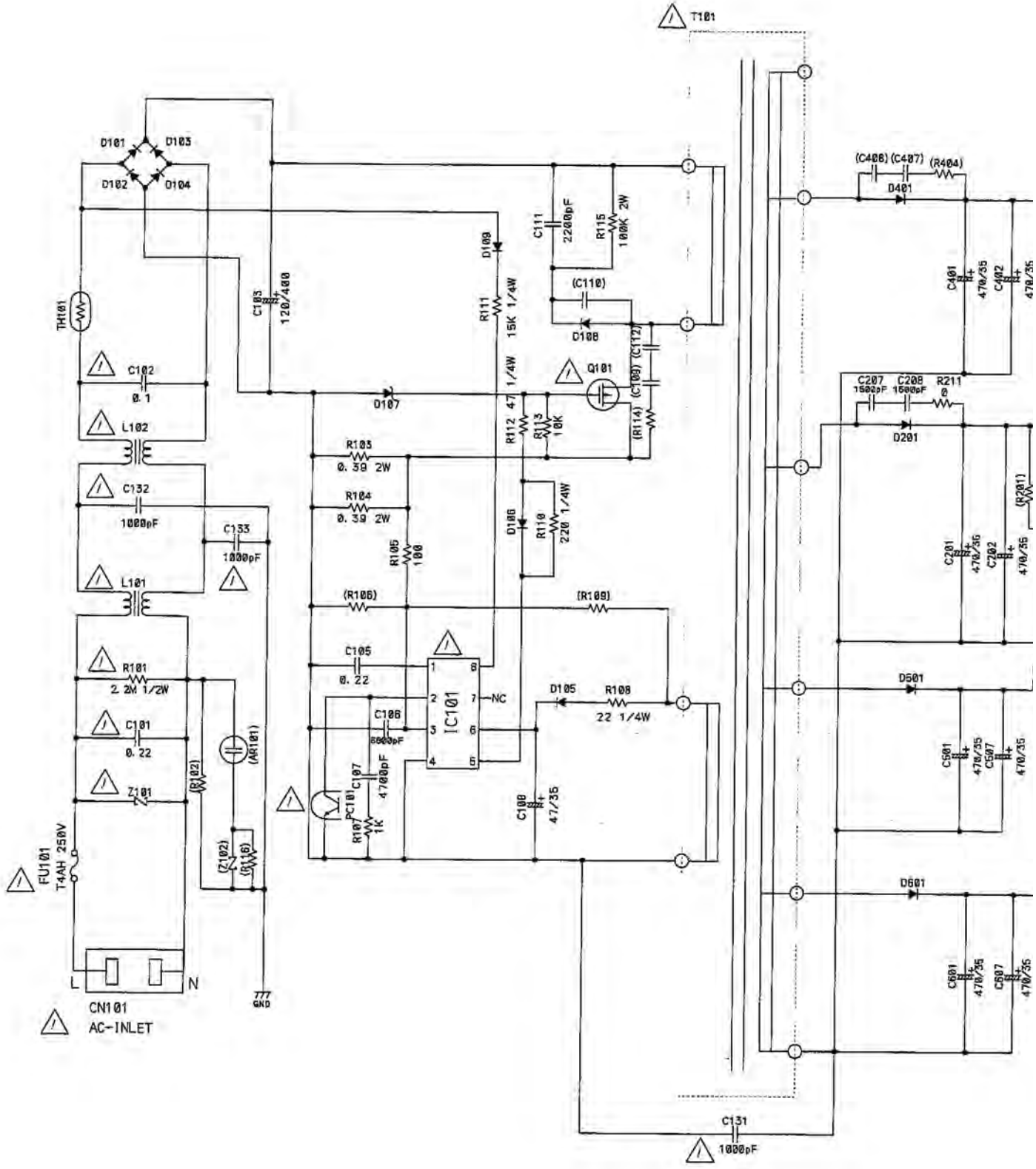
D

E

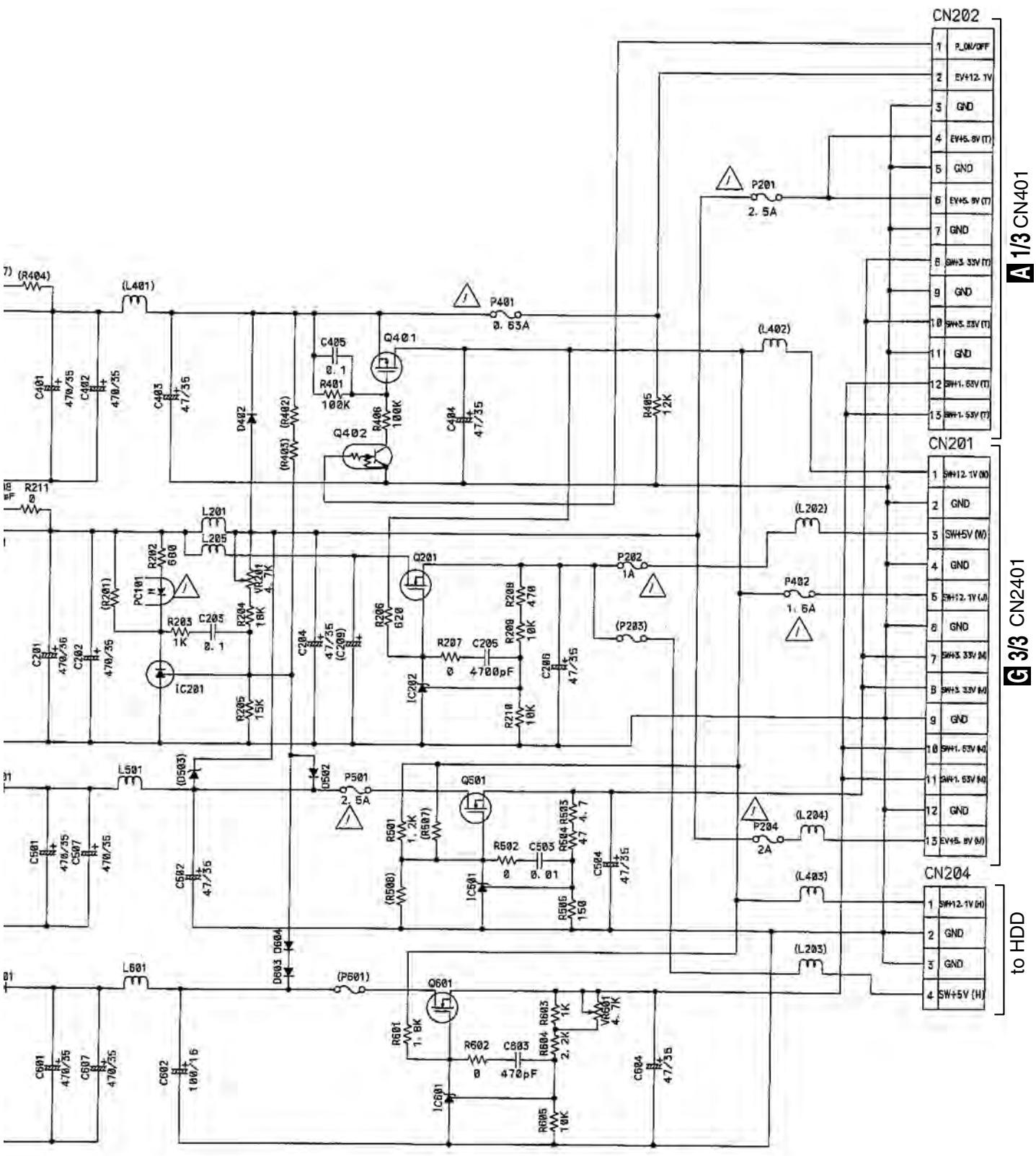
F

3.14 POWER SUPPLY UNIT

POWER SUPPLY UNIT (VWR1403)



Unit	Resistor	Ω/W (under 1/4W for no direction W
	Capacitor	μF/V (under 50V for no direction V

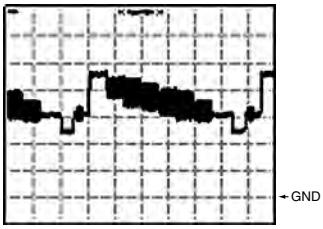

CN202
1 P_ON/OFF
2 5V/12.1V
3 GND
4 5V/5.0V (T)
5 GND
6 5V/5.0V (T)
7 GND
8 SW+3.3V (T)
9 GND
10 SW+3.3V (T)
11 GND
12 SW+1.65V (T)
13 SW+1.65V (T)
A 1/3 CN401
CN201
1 SW+12.1V (M)
2 GND
3 SW+5V (M)
4 GND
5 SW+12.1V (M)
6 GND
7 SW+3.3V (M)
8 SW+3.3V (M)
9 GND
10 SW+1.65V (M)
11 SW+1.65V (M)
12 GND
13 5V/5.0V (M)
G 3/3 CN2401
CN204
1 SW+12.1V (H)
2 GND
3 GND
4 SW+5V (H)
to HDD
P201 2.5A
P202 1A
P203
P204 2A
P401 0.63A
P402 1.6A
P501 2.5A
(P601)
(L401)
(L402)
(L202)
(L204)
(L403)
(L203)
(L501)
(L601)
(R404)
R211 0
L201
L205
Q201
Q401
Q402
Q501
Q601
IC201
IC202
IC501
IC601
PC101
C205 0.1
C207 4700pF
C503 0.01
C603 470pF
R203 1K
R207 0
R502 0
R602 0
R205 15K
R210 10K
R505 150
R605 10K
R601 1.8K
R603 1K
R604 2.2K
R405 12K
R406 100K
R401 100K
R206 620
R208 470
R209 10K
R501 1.2K
R503 47
R504 4.7
D503
D502
D603
D604
C401 470/35
C402 470/35
C403 47/35
C404 47/35
C405 0.1
C201 470/35
C202 470/35
C204 47/35
C206 47/35
C501 470/35
C502 47/35
C504 47/35
C507 470/35
C601 470/35
C602 100/16
C604 47/35
C607 470/35

3.15 WAVE FORMS

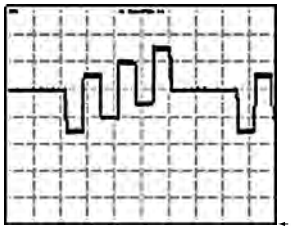
Note : The encircled numbers denote measuring point in the schematic diagram.

A JACB ASSY

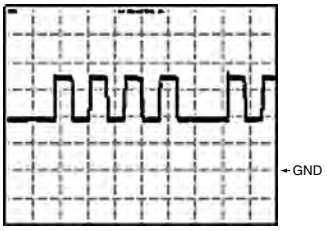
1 IC100-pin18 (TU-VIN)
(Function : Tuner 9ch)
V:500mV/div. H:10μsec/div.



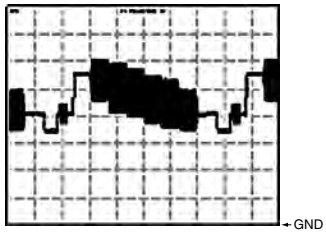
6 C2034+side (CbOUT)
(Function : DVD play)
V:500mV/div. H:10μsec/div.



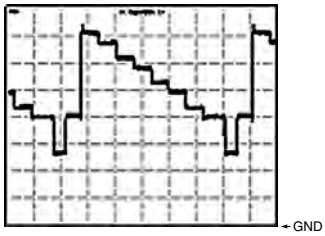
11 CN4002-pin23 (Cb_OUT MtoT)
(Function : DVD play)
V:500mV/div. H:10μsec/div.



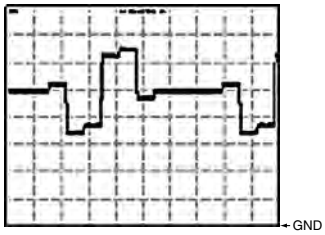
16 IC100-pin14 (2VIN)
(Function : LINE2 IN)
V:500mV/div. H:10μsec/div.



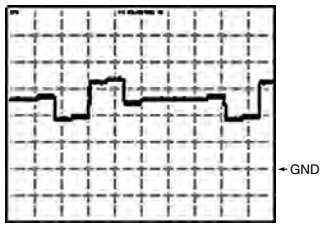
2 C2036+side (Y1OUT)
(Function : DVD play)
V:500mV/div. H:10μsec/div.



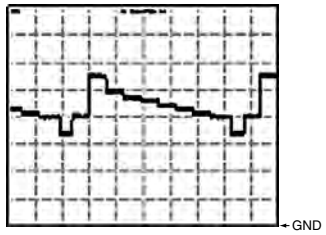
7 C2033+side (CrOUT)
(Function : DVD play)
V:500mV/div. H:10μsec/div.



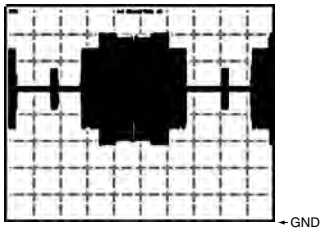
12 CN4002-pin25 (Cr_OUT MtoT)
(Function : DVD play)
V:500mV/div. H:10μsec/div.



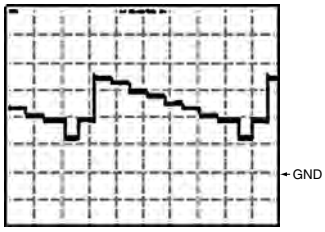
17 IC100-pin7 (Y2IN)
(Function : LINE2 IN)
V:500mV/div. H:10μsec/div.



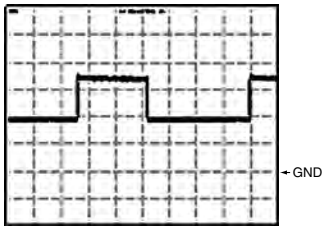
3 IC100-pin34 (C1OUT)
(Function : DVD play)
V:500mV/div. H:10μsec/div.



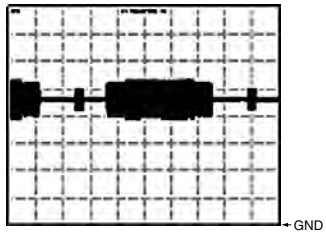
8 CN4002-pin19 (Y_OUT MtoT)
(Function : Tuner 9ch)
V:500mV/div. H:10μsec/div.



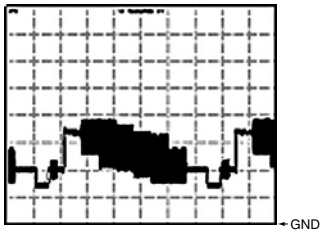
13 CN4002-pin21 (Y/G_OUT MtoT)
(Function : DVD play)
V:500mV/div. H:10μsec/div.



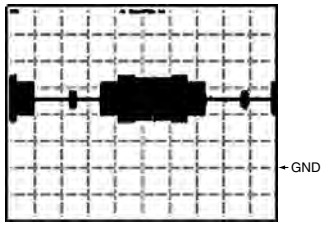
18 IC100-pin9 (C2IN)
(Function : LINE2 IN)
V:500mV/div. H:10μsec/div.



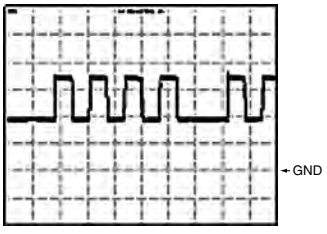
4 C2037+side (V1OUT)
(Function : DVD play)
V:1V/div. H:10μsec/div.



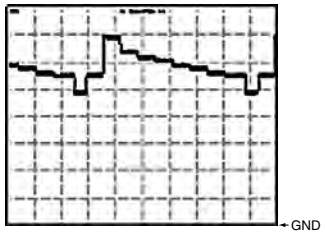
9 CN4002-pin17 (C_OUT MtoT)
(Function : DVD play)
V:500mV/div. H:10μsec/div.



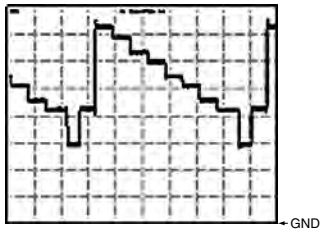
14 CN4002-pin23 (Cb/B_OUT MtoT)
(Function : DVD play)
V:500mV/div. H:10μsec/div.



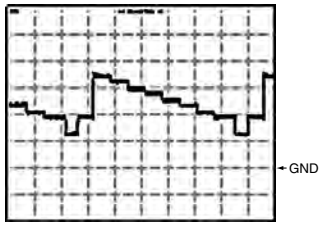
19 CN4002-pin28 (Y_IN TtoM)
(Function : LINE2 IN)
V:500mV/div. H:10μsec/div.



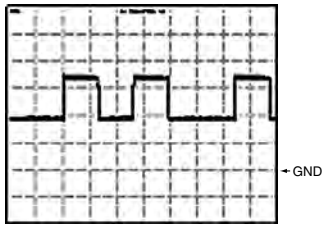
5 C2035+side (YOUT)
(Function : DVD play)
V:500mV/div. H:10μsec/div.



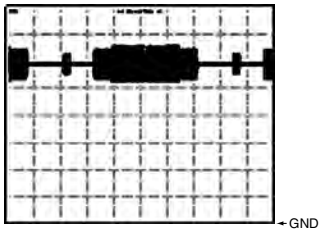
10 CN4002-pin21 (Yp_OUT MtoT)
(Function : DVD play)
V:500mV/div. H:10μsec/div.



15 CN4002-pin25 (Cr/R_OUT MtoT)
(Function : DVD play)
V:500mV/div. H:10μsec/div.



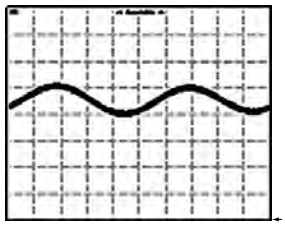
20 CN4002-pin30 (C_IN TtoM)
(Function : LINE2 IN)
V:500mV/div. H:10μsec/div.



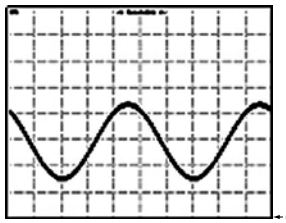
A JACB ASSY

Measurement Condition :

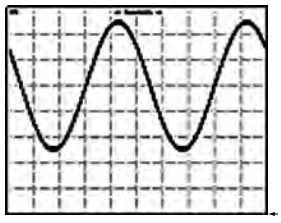
21 **IC100-pin87 (TU-LIN)**
(Function : Tuner 9ch)
V:500mV/div. H:10μsec/div.



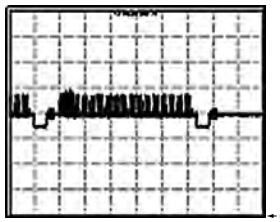
22 **C2038+side (L_OUT)**
Function : DVD play)
V:500mV/div. H:10μsec/div.



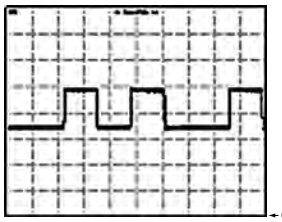
23 **CN4002-pin32 (L_IN)**
(Function : LINE2 IN)
V:500mV/div. H:10μsec/div.



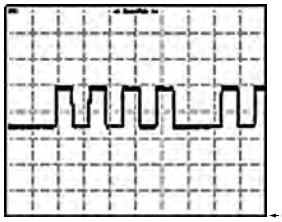
24 **IC101-pin81 (TEXTV)**
(Function : RF IN)
V:1V/div. H:10μsec/div.



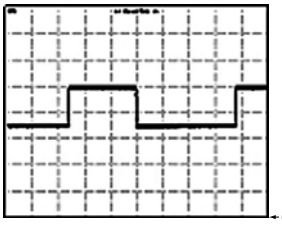
25 **JA801-pin15 (R/C IN)**
(Function : LINE1 IN)
V:500mV/div. H:10μsec/div.



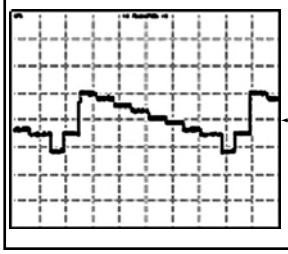
26 **JA801-pin7 (BIN)**
(Function : LINE1 IN)
V:500mV/div. H:10μsec/div.



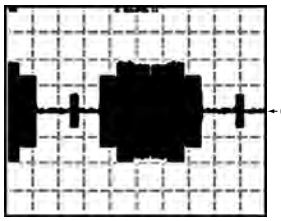
27 **JA801-pin11 (G IN)**
(Function : LINE1 IN)
V:500mV/div. H:10μsec/div.



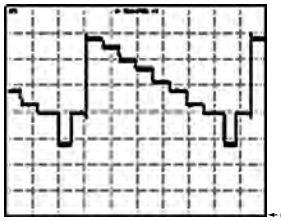
28 **JA801-pin20 (AV2_V/Y IN))**
(Function : LINE1 IN)
V:1V/div. H:10μsec/div.



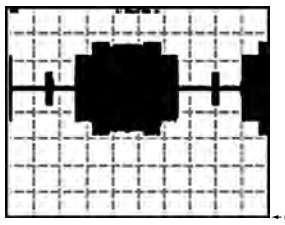
29 **JA801-pin15 (R/C IN)**
(Function : LINE1 IN)
V:500mV/div. H:10μsec/div.



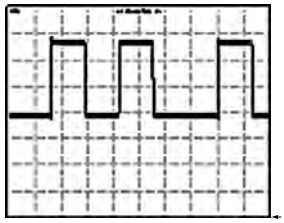
30 **CN1-pin29 (AV1_V/Y_OUT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



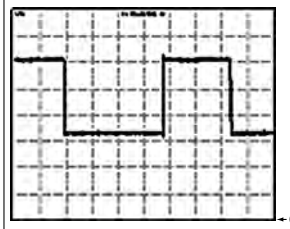
31 **CN1-pin26 (AV1_R/C_OUT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



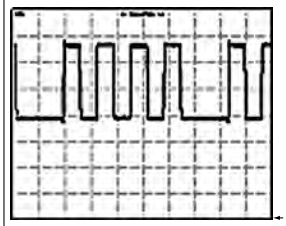
32 **CN1-pin26 (AV1_R/C_OUT)**
(Function : DVD play)
V:1V/div. H:10μsec/div.



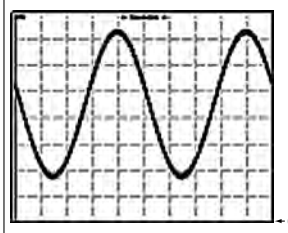
33 **CN1-pin24 (AV1_G_OUT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



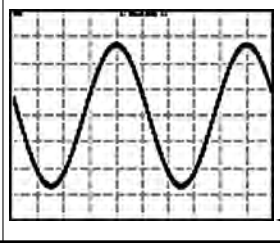
34 **CN1-pin12 (AV1_B_OUT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



35 **CN1-pin4 (AV1_L_OUT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



36 **JA801-pin6 (AV2_L_IN)**
(Function : LINE1 IN)
V:1V/div. H:10μsec/div.

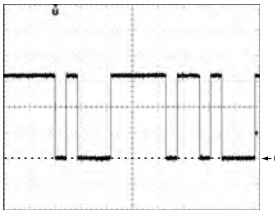


C DTBR ASSY

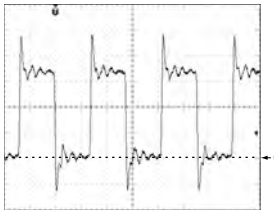
Measurement Condition :

1 **IC101-pin16 (DNEB)**
H: 10ns/div V: 1v/div

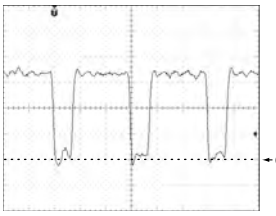
6 **IC106 Pin 146 (TXD1B)**
H: 20ns/div V: 1v/div



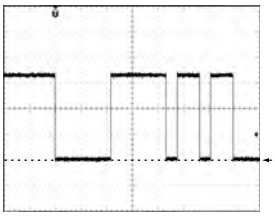
11 **IC106 Pin 1 (CT TPS8)**
H: 40ns/div V: 1v/div



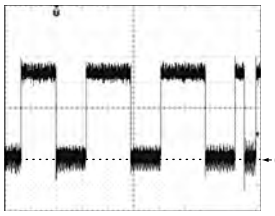
2 **IC101 Pin 17 (DCASB)**
H: 10ns/div V: 1v/div



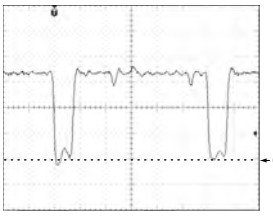
7 **IC106 Pin 145 (RXD1B)**
H: 20ns/div V: 1v/div



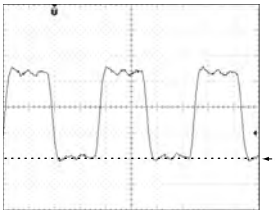
12 **IC106 Pin 2 (CT TPS9)**
H: 4ms/div V: 1v/div



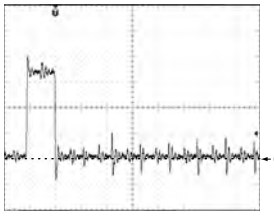
3 **IC101 Pin 18 (DRASB)**
H: 10ns/div V: 1v/div



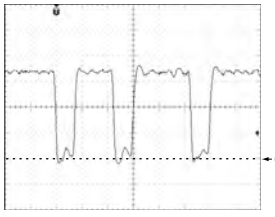
8 **IC106 Pin 137 (CLK27IN)**
H: 10ns/div V: 1v/div



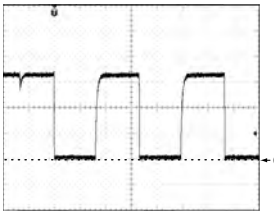
13 **IC106 Pin 4 (CT TPS10)**
H: 100ns/div V: 1v/div



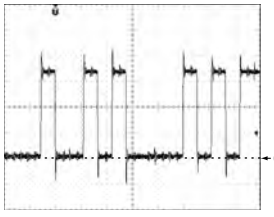
4 **IC101 Pin 19 (DCSB)**
H: 10ns/div V: 1v/div



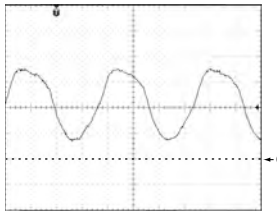
9 **IC106 Pin 118 (SCL0)**
H: 4ms/div V: 1v/div



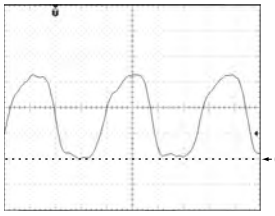
14 **IC106 Pin 5 (CT TPS0)**
H: 200ns/div V: 1v/div



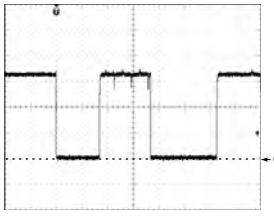
19 **IC313 Pin 63 (X300)**
H: 10ns/div V: 500mv/div



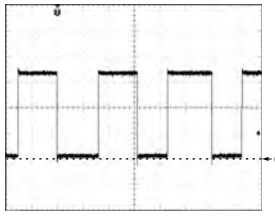
5 **IC101 Pin 38 (SDCLK)**
H: 2ns/div V: 1v/div



10 **IC106 Pin 117 (SDA0)**
H: 20ms/div V: 1v/div



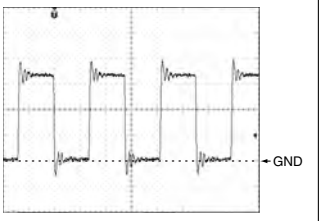
20 **IIC313 Pin 38 (TSVALID)**
H: 4ms/div V: 1v/div



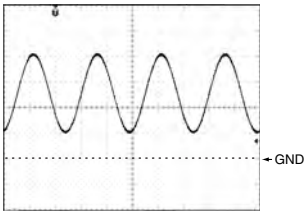
C DTBR ASSY

Measurement Condition :

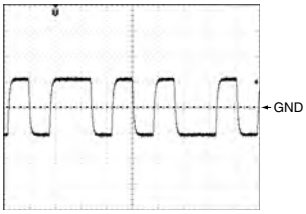
21 **IC313 Pin 36 (TSCLK)**
H: 40ns/div V: 1v/div



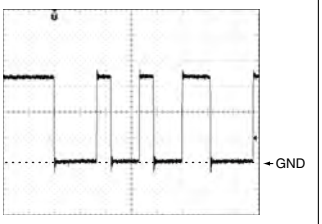
26 **CN103 Pin6 (DT_L)**
H: 400ms/div V: 2v/div



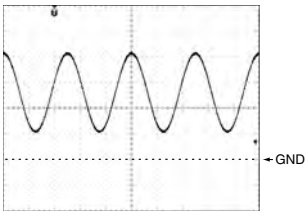
31 **JA101 TP112 (SPDIF)**
H: 200ns/div V: 500mv/div



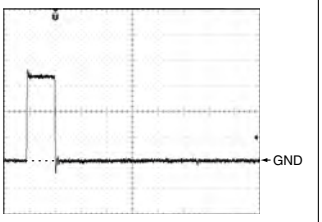
22 **IC313 Pin 34 (TSDAT0)**
V:000mV/div. H:00µsec/div.



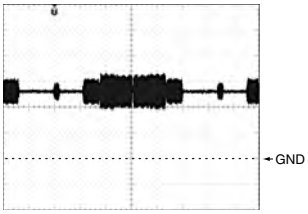
27 **CN103 Pin8 (DT_R)**
H: 400ms/div V: 2v/div



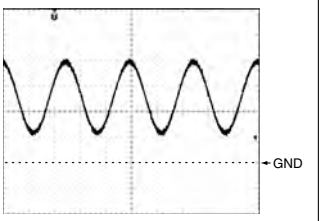
23 **IC313 Pin 23 (TSFSTART)**
H: 100ns/div V: 1v/div



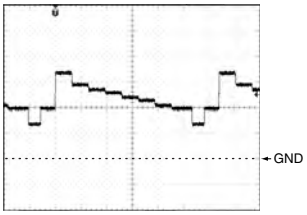
28 **CN103 Pin 10 (DT_C)**
H: 10ms/div V: 500mv/div



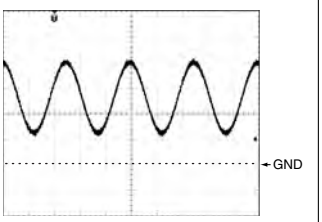
24 **IC501 Pin 8 (VoutR)**
H: 400ms/div V: 1v/div



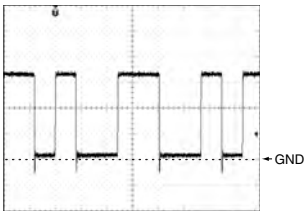
29 **CN103 Pin 12 (DT_Y)**
H: 10ms/div V: 500mv/div



25 **IC501 Pin 7 (VoutL)**
H: 400ms/div V: 1v/div



30 **IC109 Pin 13 (SPDIFRFE)**
H: 200ns/div V: 1v/div

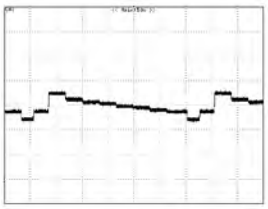


G MAIN ASSY

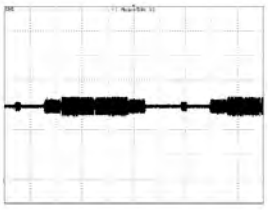
Measurement Condition :

No.1 - 8 : EBU Color Bar (100 / 0 / 75 / 0)

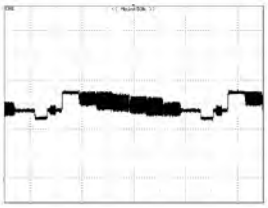
1 CN2301 Pin8 (Y_IN)
V: 1V/div. H: 10us/div.



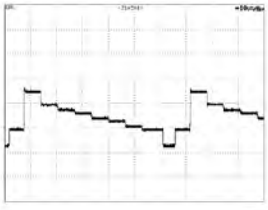
2 CN2301 Pin6 (C_IN)
V: 1V/div. H: 10us/div.



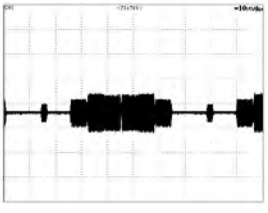
3 CN2301 Pin_8 (CVBS_IN)
V: 1V/div. H: 10us/div.



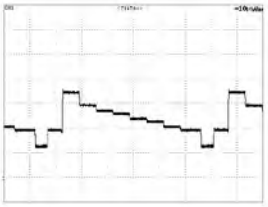
4 CN2301 Pin17 (Y_OUT)
V: 0.5V/div. H: 10us/div.



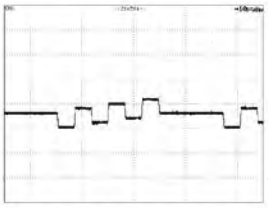
5 CN2301 Pin19 (C_OUT)
V: 0.5V/div. H: 10us/div.



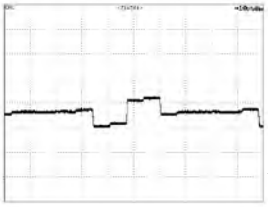
6 CN2301 Pin15 (YP_OUT)
V: 0.5V/div. H: 10us/div.



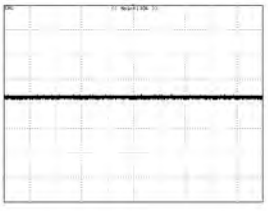
7 CN2301 Pin13 (CB_OUT)
V: 0.5V/div. H: 10us/div.



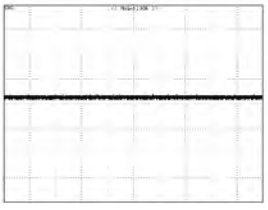
8 CN2301 Pin11 (CR_OUT)
V: 0.5V/div. H: 10us/div.



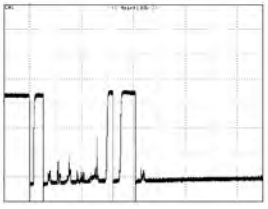
9 IC501 Pin22 (XDMUTE1)
V: 1V/div. H: 20us/div.



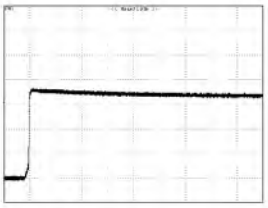
10 IC501 Pin23 (XDMUTE2)
V: 1V/div. H: 20us/div.



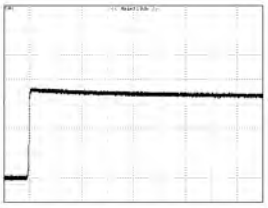
11 CN601 Pin3 (CLOSE)
open → close
V: 1V/div. H: 20us/div.



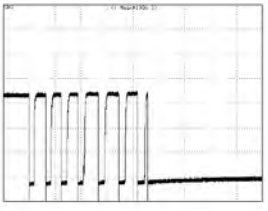
12 CN601 Pin3 (CLOSE)
close → open
V: 1V/div. H: 20us/div.



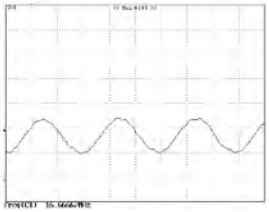
13 CN601 Pin5 (CLOSE)
open → close
V: 1V/div. H: 20us/div.



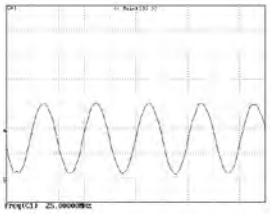
14 CN601 Pin5 (CLOSE)
close → open
V: 1V/div. H: 20us/div.



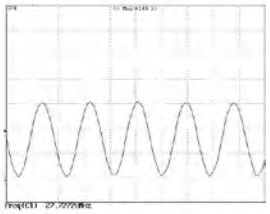
15 X201 (16.93MHz)
V: 1V/div. H: 20ns/div.



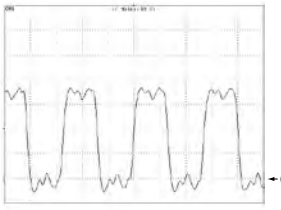
16 X1001 (24.576MHz)
V: 1V/div. H: 20ns/div.



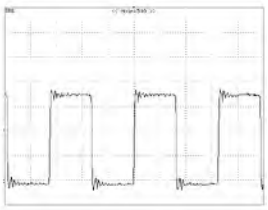
17 X1002 (27MHz)
V: 1V/div. H: 20ns/div.



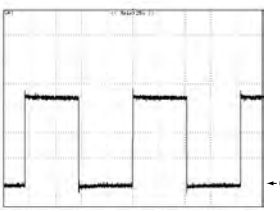
18 IC3101 Pin11 (ADCCLKO)
V: 1V/div. H: 20ns/div.



19 IC3101 Pin12 (AD_BCK)
V: 1V/div. H: 100ns/div.

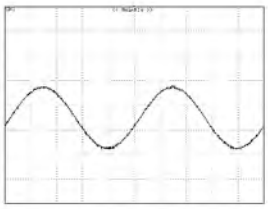


20 IC3101 Pin10 (AD_LRCK)
V: 1V/div. H: 5us/div.

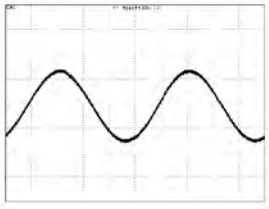


G MAIN ASSY

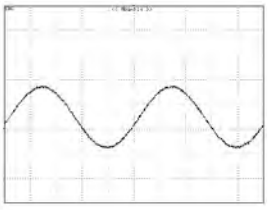
21 **CN2301 Pin4 (LCH IN)**
V: 1V/div. H: 200us/div.



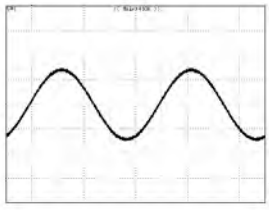
26 **CN2301 Pin21 (LCH OUT)**
V: 2V/div. H: 200us/div.



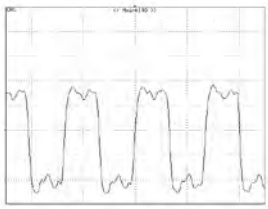
22 **CN2301 Pin2 (RCH IN)**
V: 1V/div. H: 200us/div.



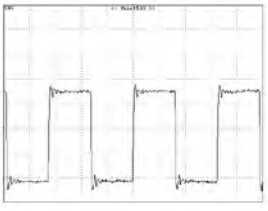
27 **CN2301 Pin23 (RCH OUT)**
V: 2V/div. H: 200us/div.



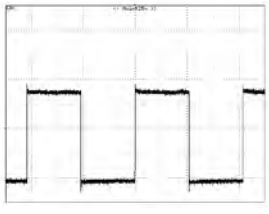
23 **IC3201 Pin16 (DACCLKO)**
V: 1V/div. H: 20ns/div.



24 **IC3201 Pin1 (DACBCKO)**
V: 1V/div. H: 100ns/div.



25 **IC3201 Pin3 (DACLRCKO)**
V: 0.5V/div. H: 5us/div.



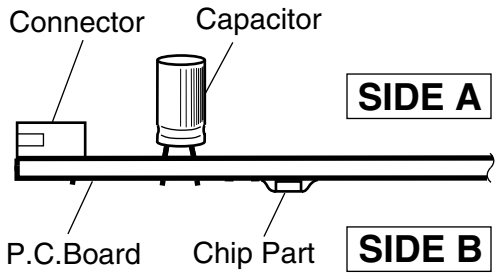
4. PCB CONNECTION DIAGRAM

NOTE FOR PCB DIAGRAMS :

1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

Symbol In PCB Diagrams	Symbol In Schematic Diagrams	Part Name
B C E	B C E B C E	Transistor
B C E	B C E B C E	Transistor with resistor
D G S	D G S D G S	Field effect transistor
		Resistor array
		3-terminal regulator

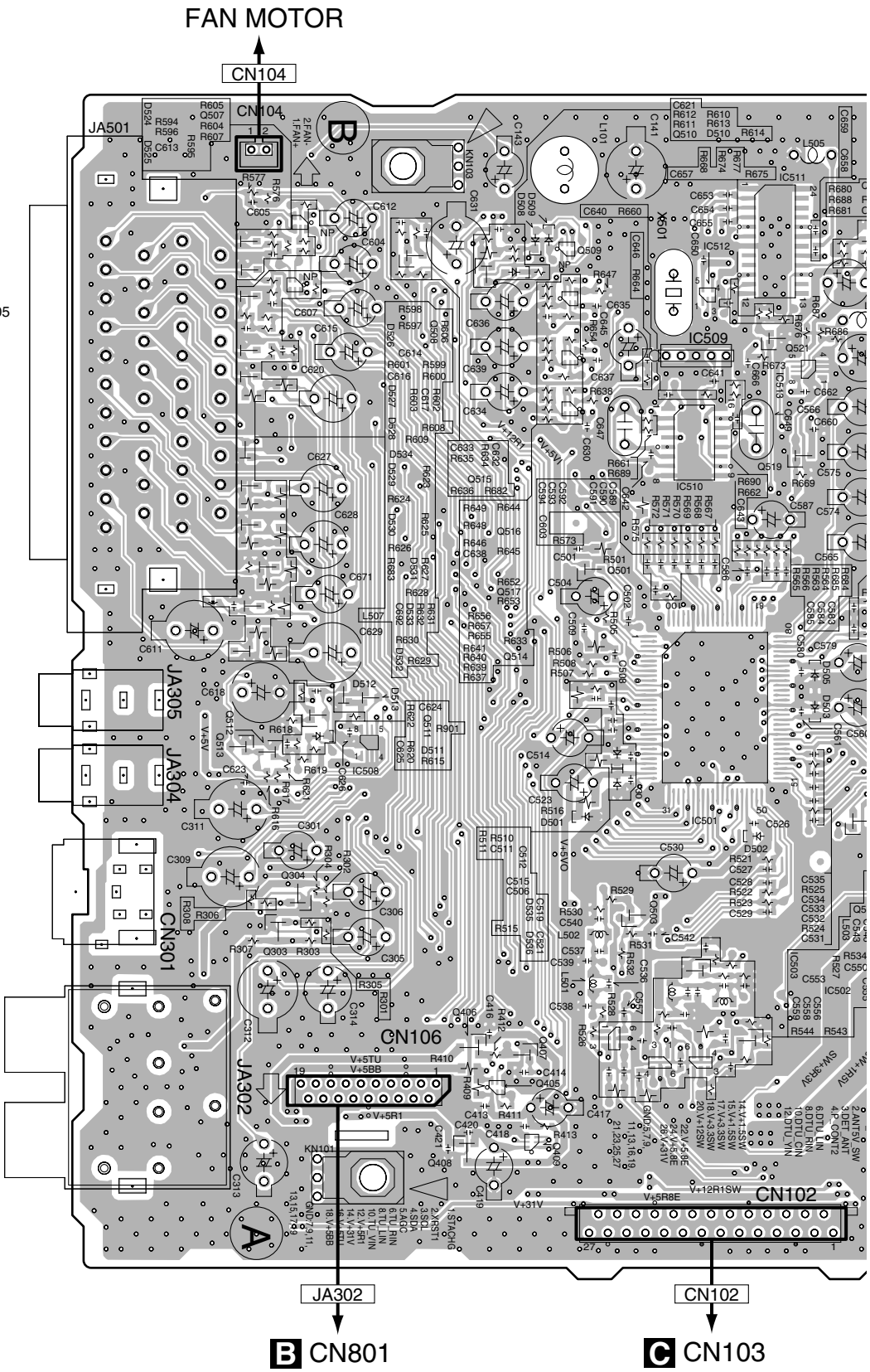
3. The parts mounted on this PCB include all necessary parts for several destinations.
   For further information for respective destinations, be sure to check with the schematic diagram.
4. View point of PCB diagrams.



4.1 JACB ASSY

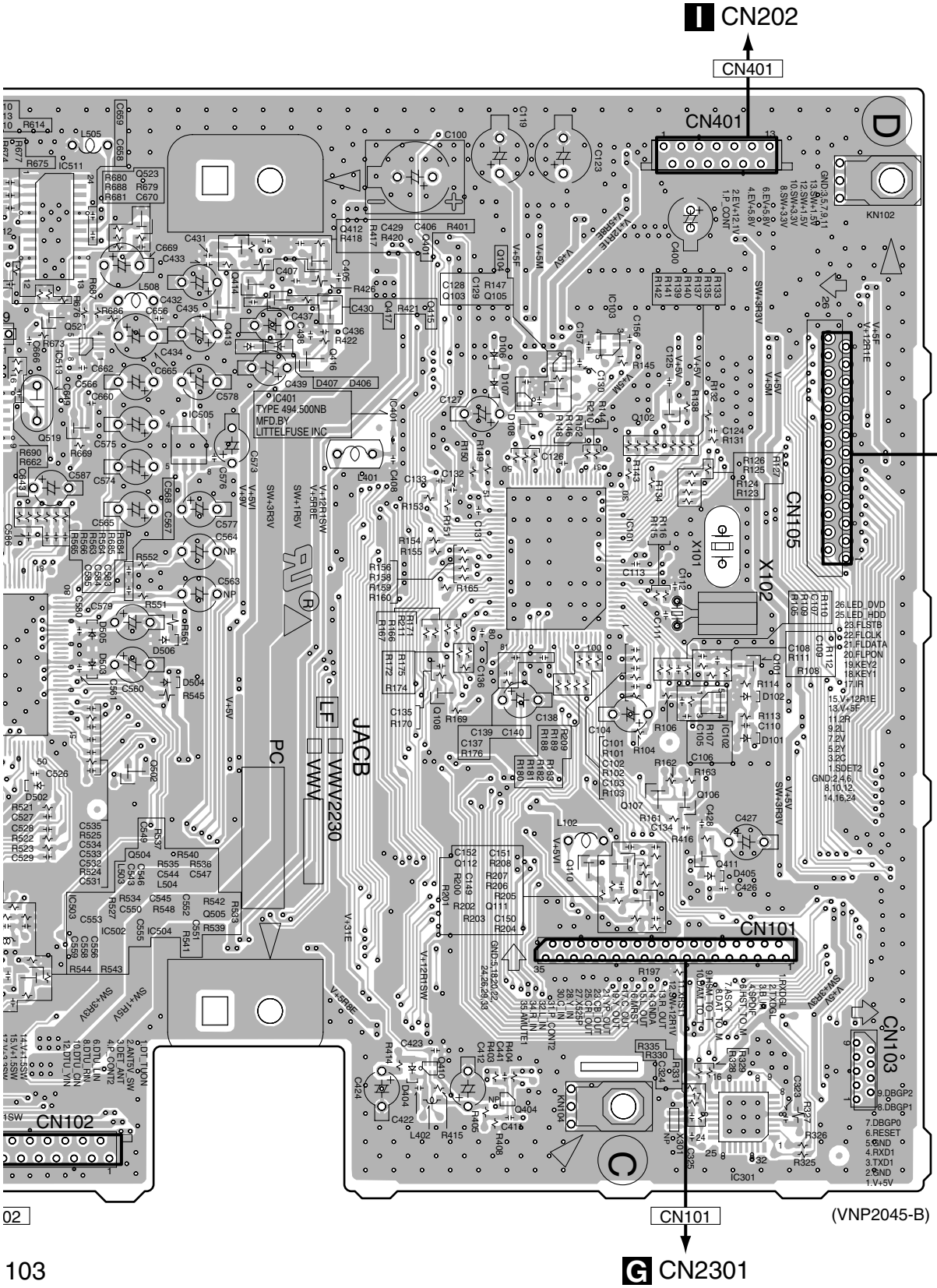
SIDE A

A JACB ASSY



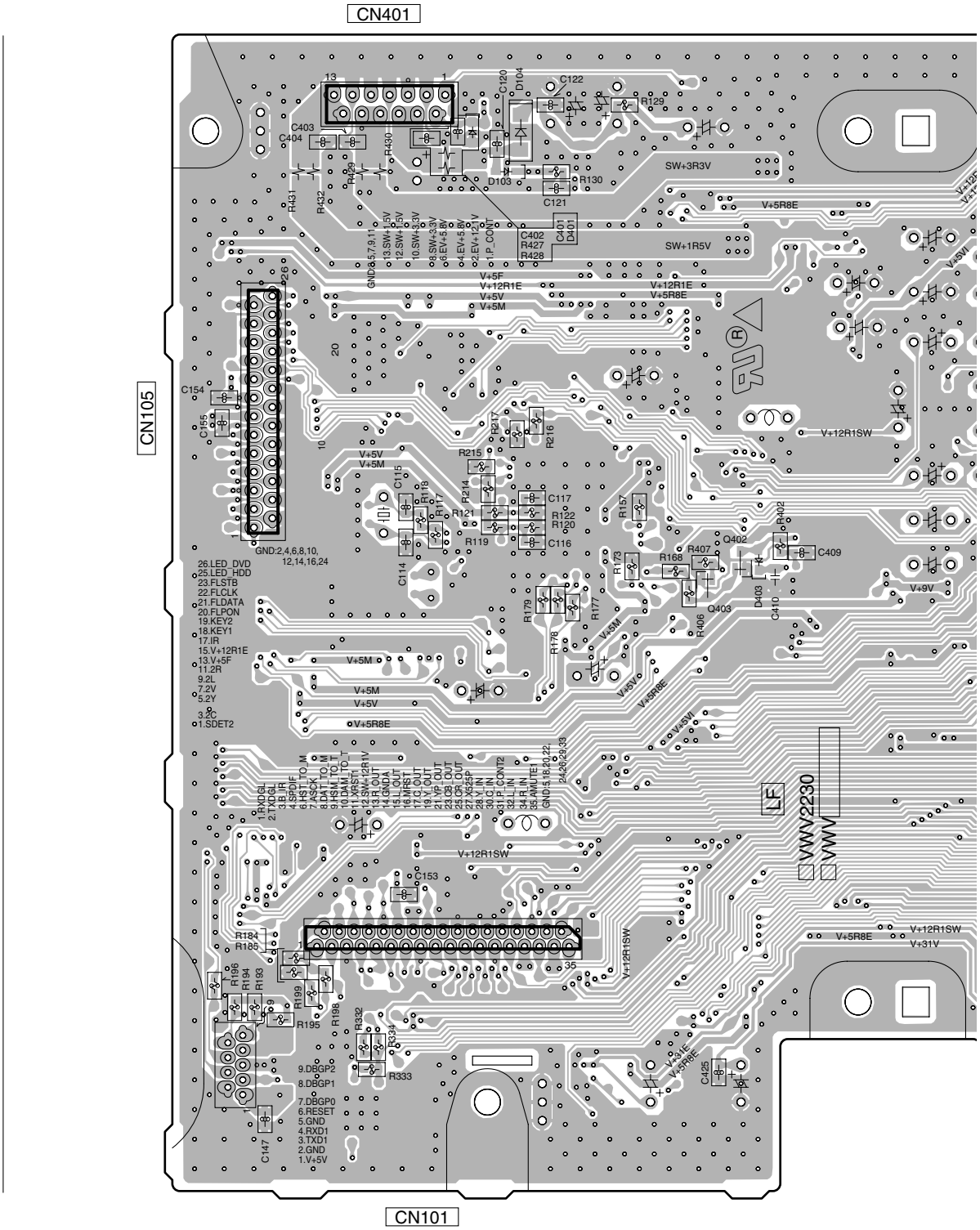
	Q507 Q510
IC511	Q523
	Q412
IC512	Q509 Q401 Q104 Q414
IC103	Q508 Q417 Q415 Q103 Q105
IC509	Q521 Q413
IC513	Q416
IC401 IC505	Q102 Q519
IC510	Q515 Q516
IC101	Q501 Q517
	Q514
	Q101 Q512 Q511 Q513
IC508 IC102	Q108
IC501	Q502
	Q106 Q107 Q304 Q503 Q504 Q110 Q112 Q411
IC503	Q303 Q505 Q111
IC502 IC504	Q406 Q407
	Q405 Q410 Q409 Q408 Q404
IC301	

SIDE A

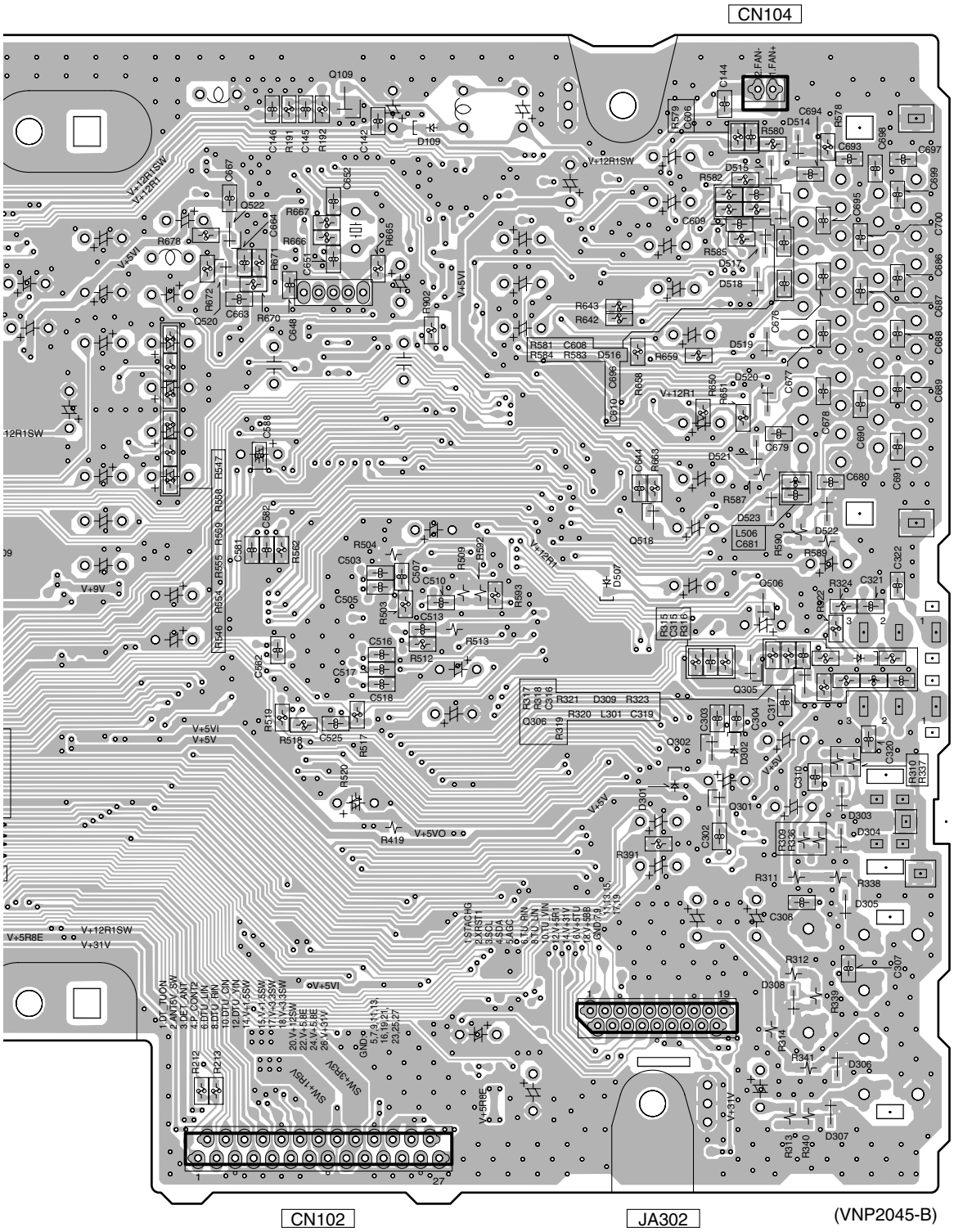

I CN202
CN401
CN401
D
KN102
CN105
D CN301
CN105
X101
X102
CN101
CN103
CN102
JACB
PC
LF VWV2230
VWW
C
CN101
(VNP2045-B)
G CN2301

SIDE B

A JACB ASSY



SIDE B



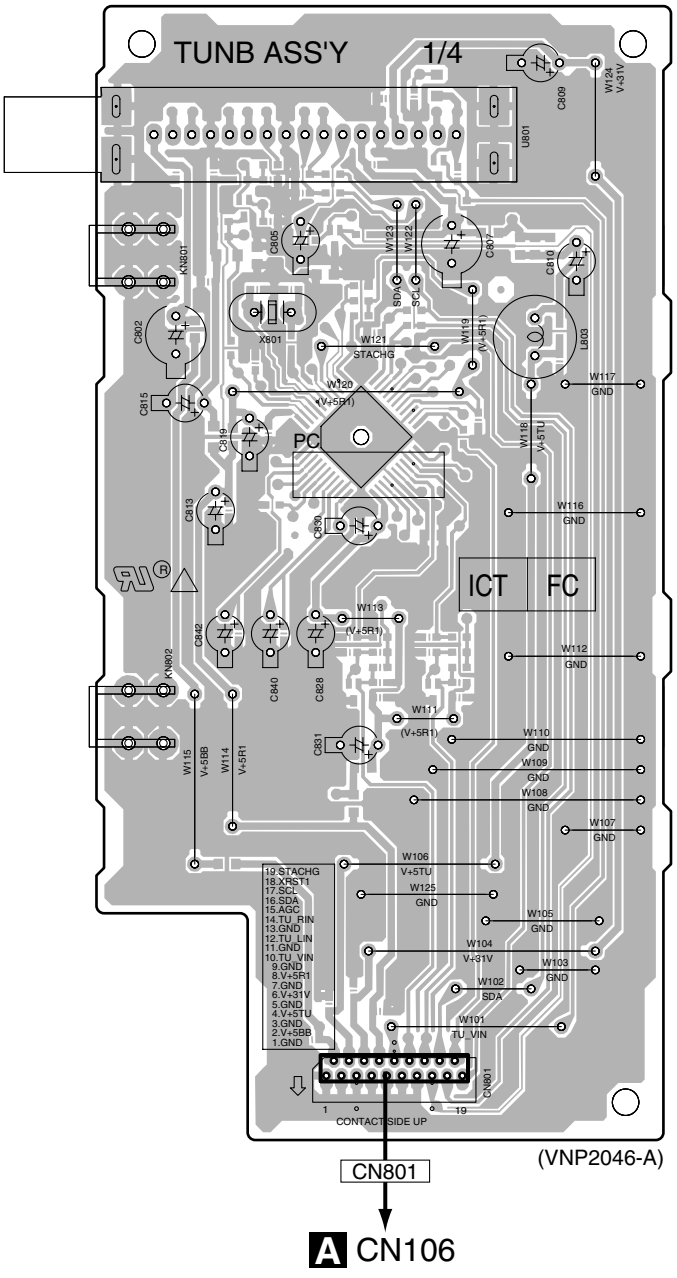
4.2 TUNB ASSY

A

SIDE A

SIDE A

B TUNB ASSY



B

B

SIDE B

SIDE B

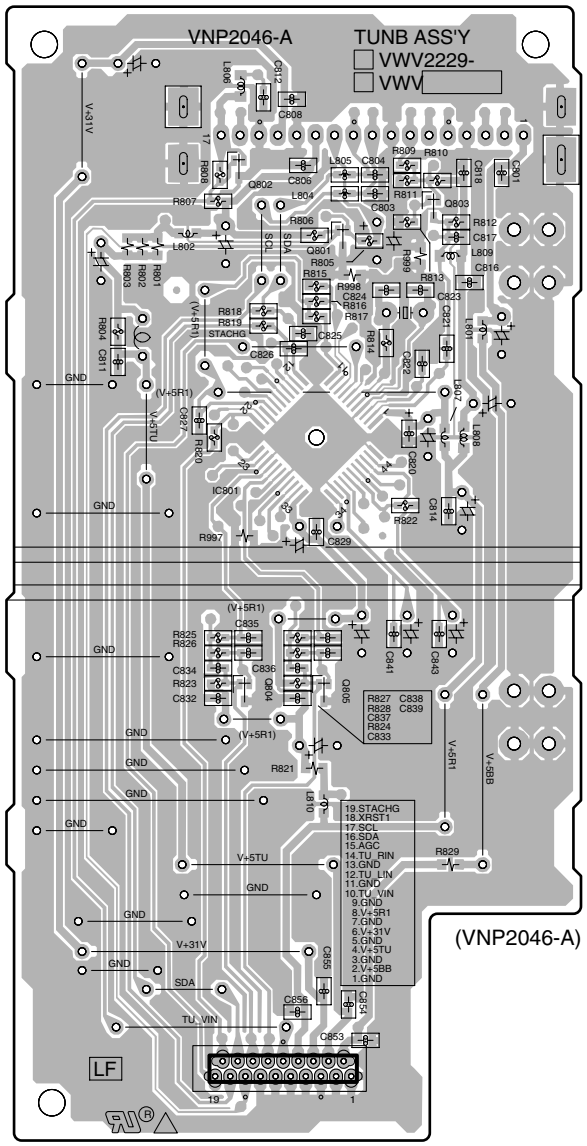
B TUNB ASSY

Q802 Q802 Q802 Q802
Q803 Q803 Q803 Q803

Q801 Q801 Q801 Q801

IC801 IC801 IC801 IC801

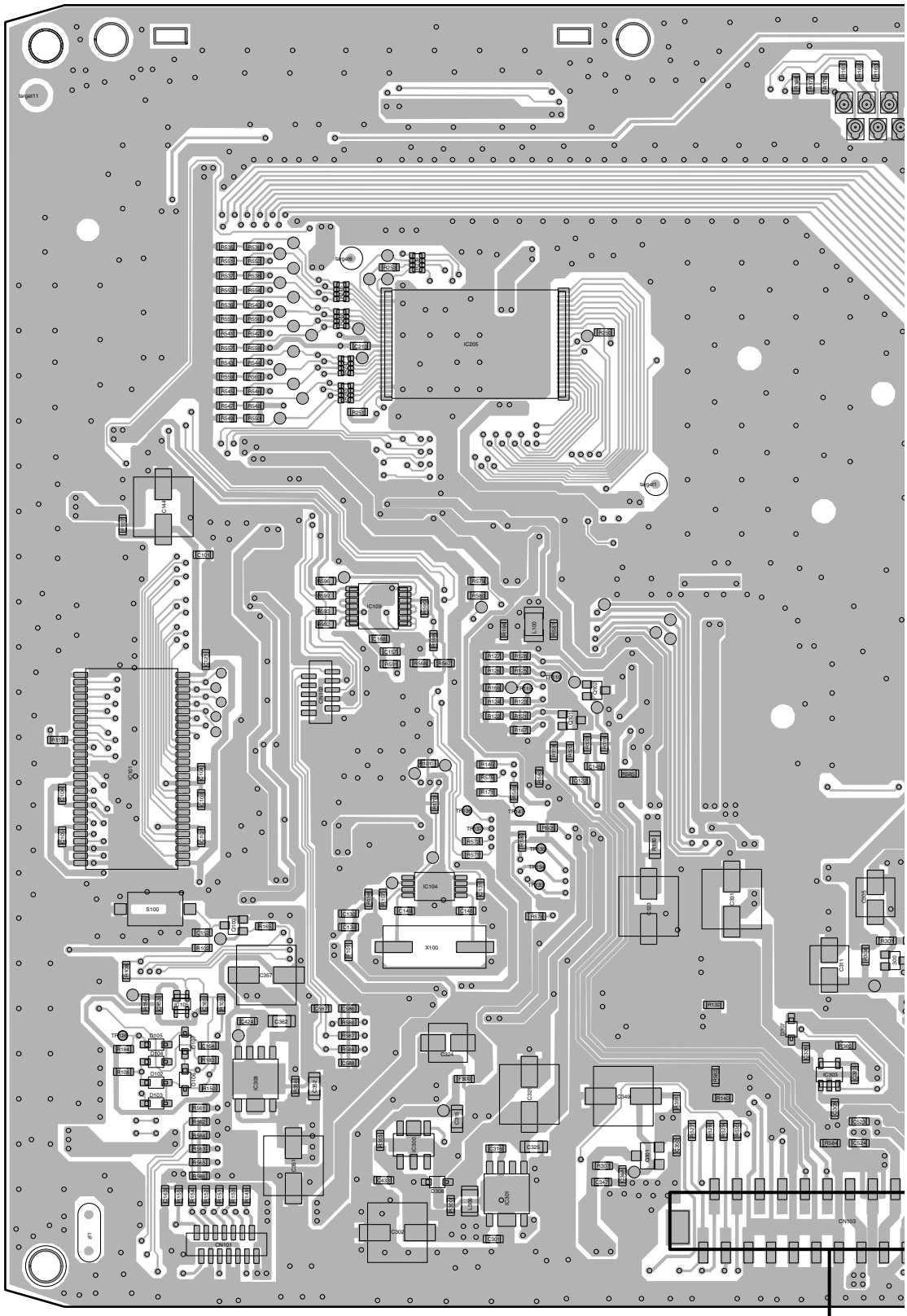
Q804 Q805 Q804 Q805 Q804 Q805 Q804 Q805



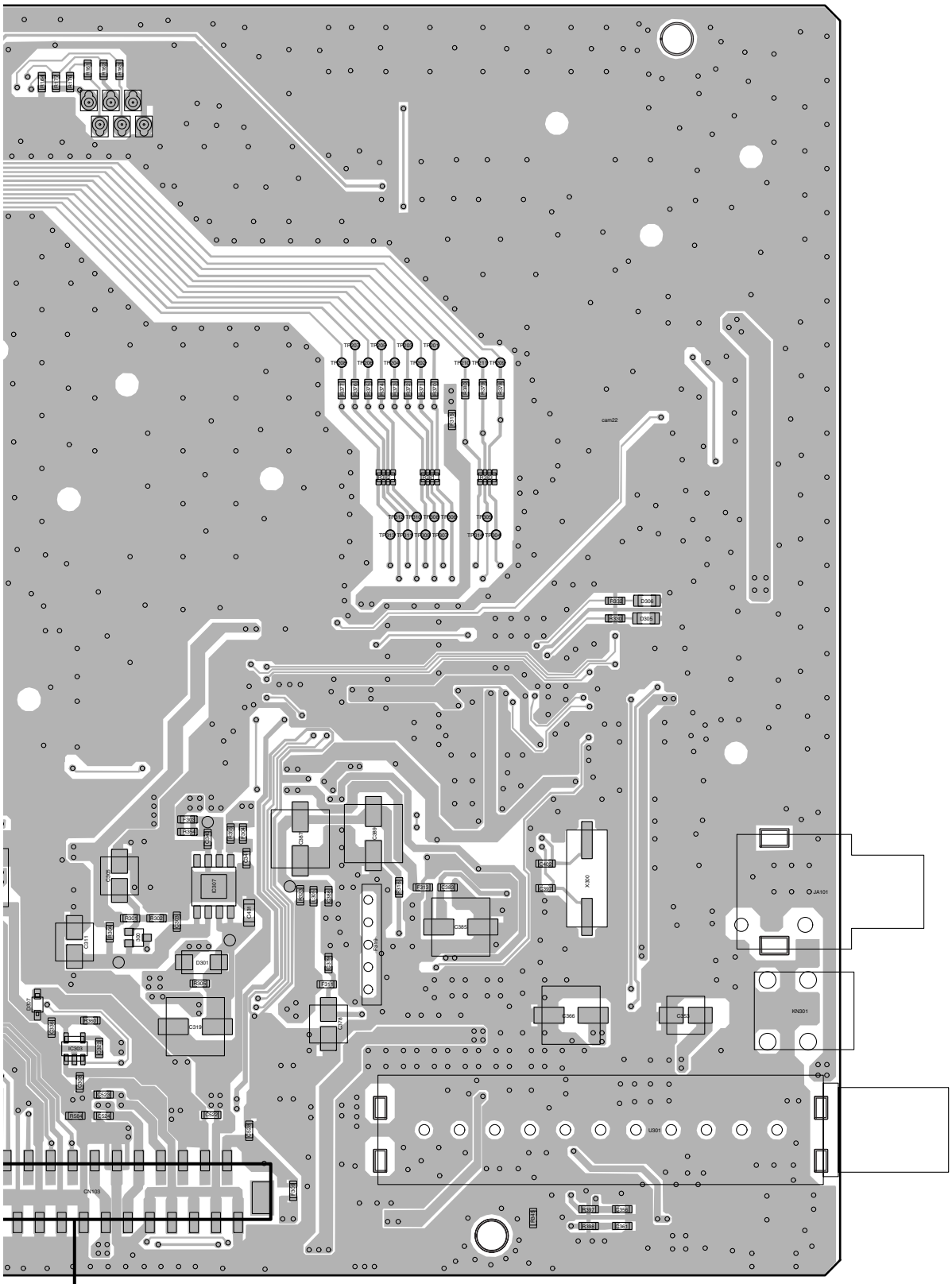
4.3 DTBR ASSY

SIDE A

C DTBR ASSY



SIDE A



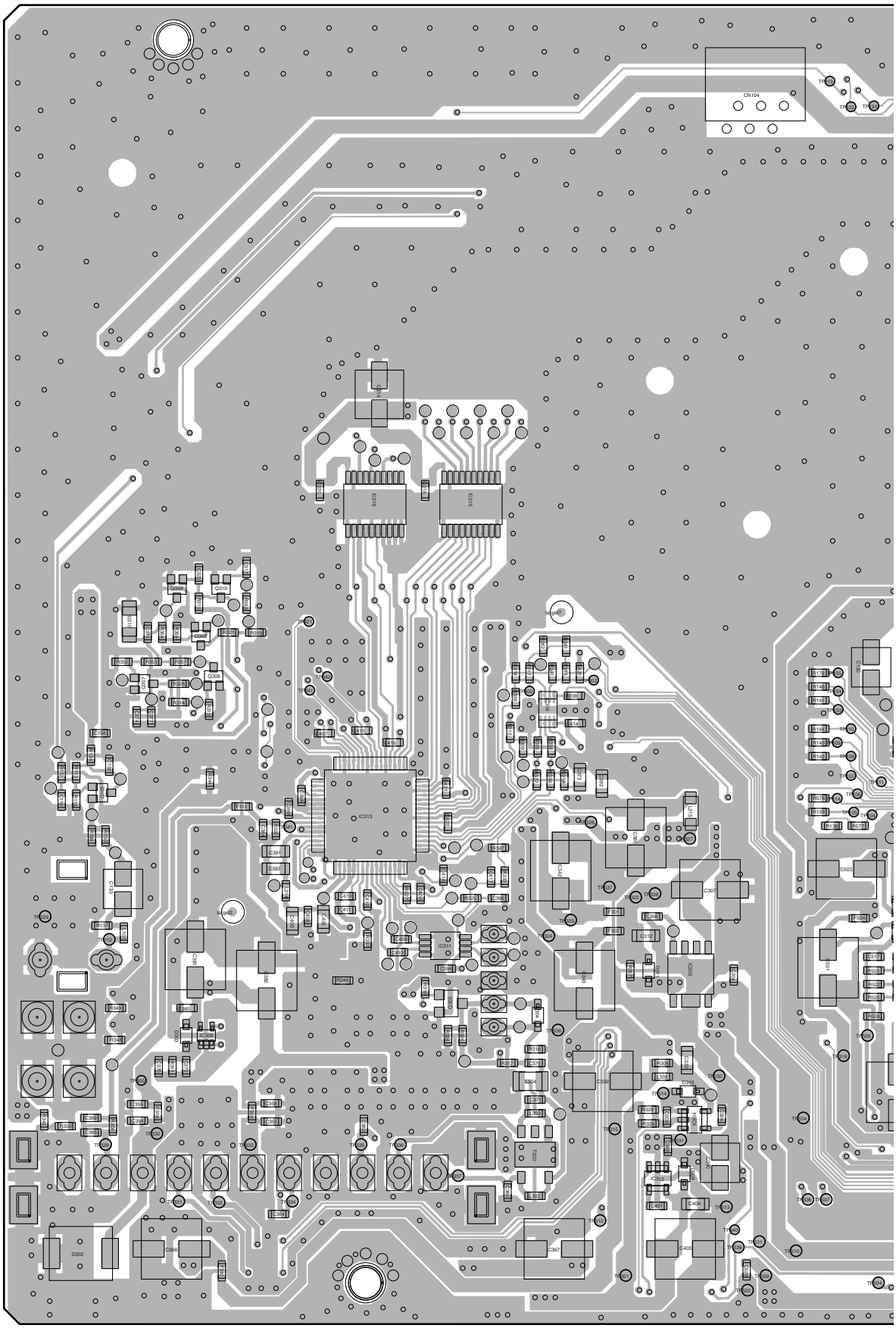
CN103

(VNP2043-C)

A CN102

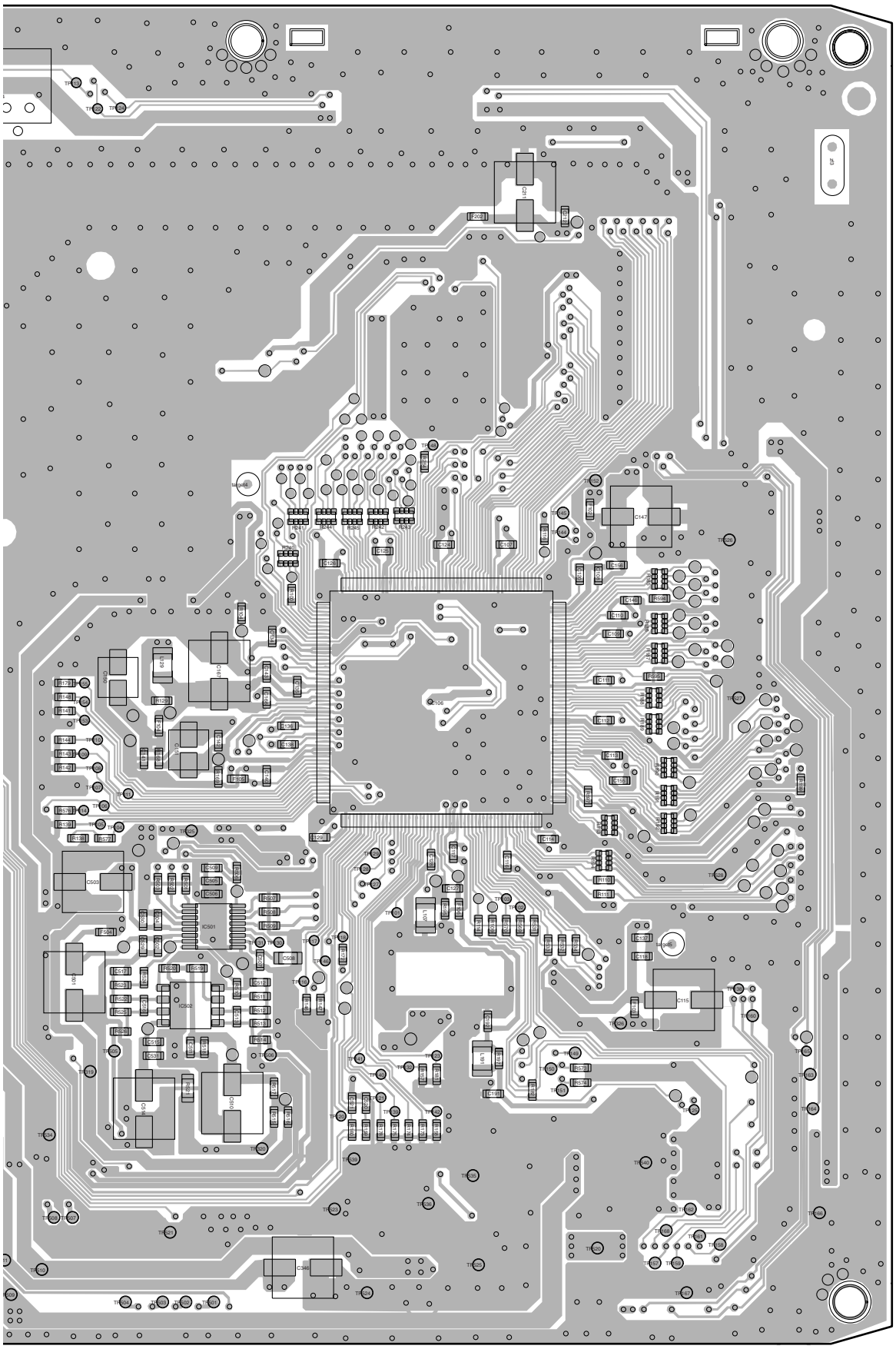
SIDE B

C DTBR ASSY



C

SIDE B

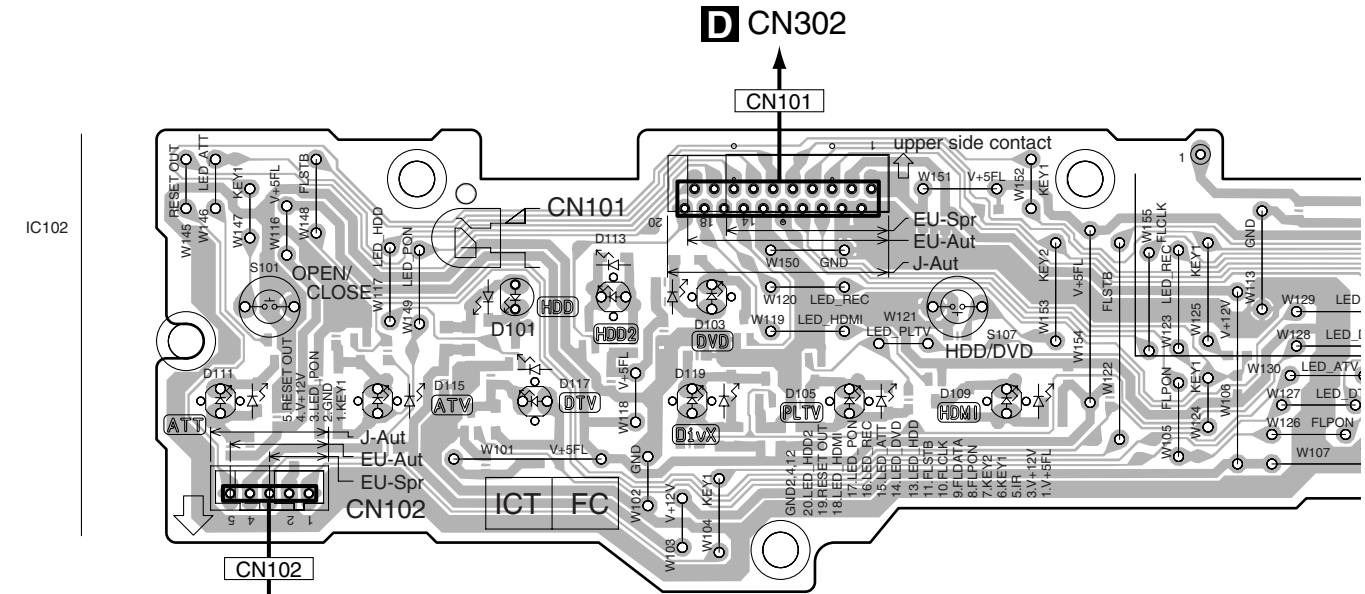


(VNP2043-C)

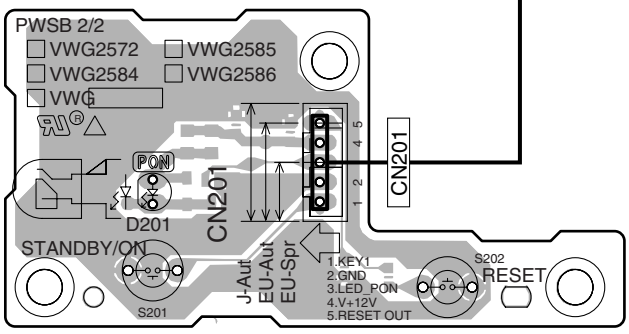
4.4 FLKY and PWSB ASSYS

SIDE A

E FLKY ASSY



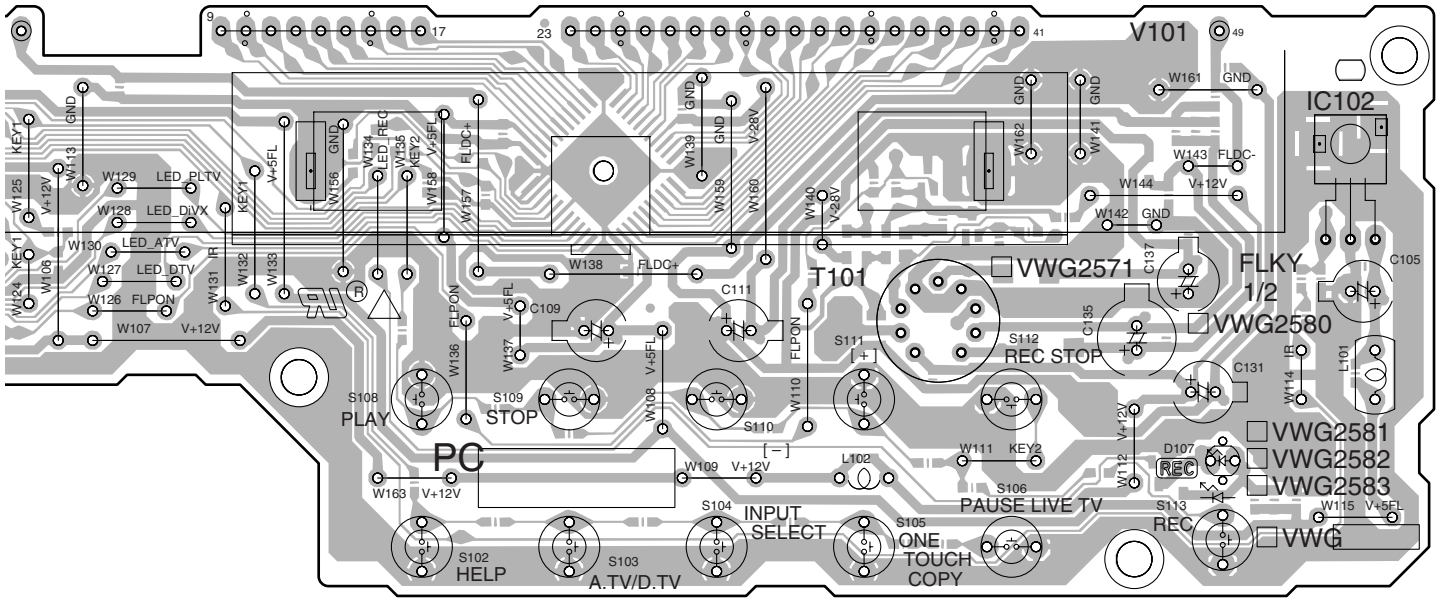
F PWSB ASSY



(VNP2047-B)

E F

SIDE A

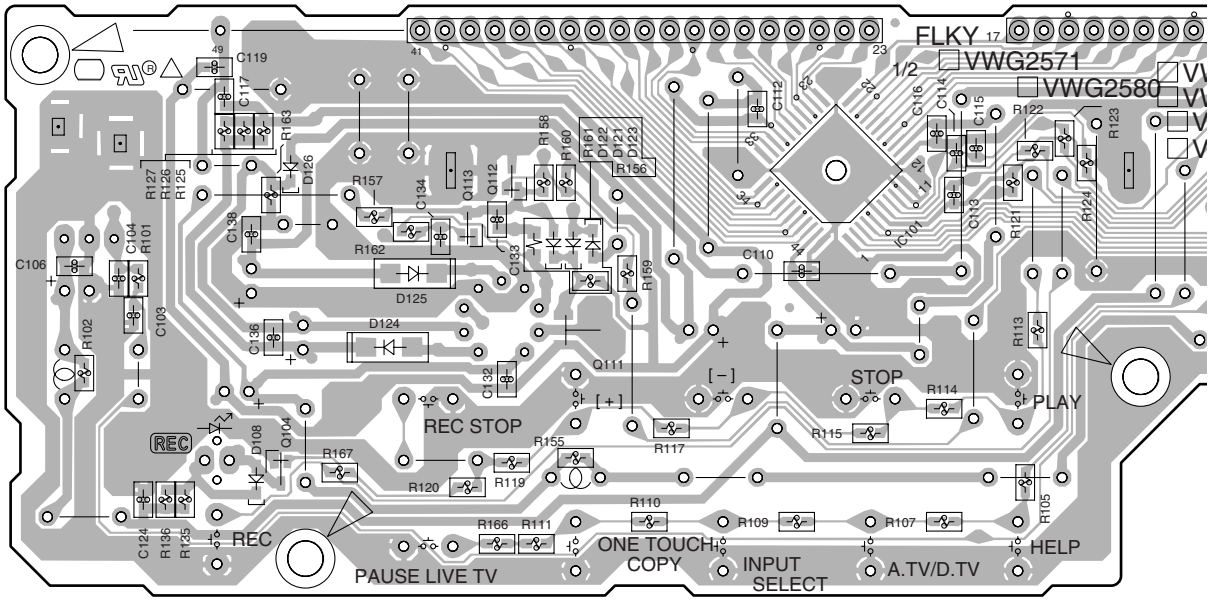


(VNP2047-B)

SIDE B

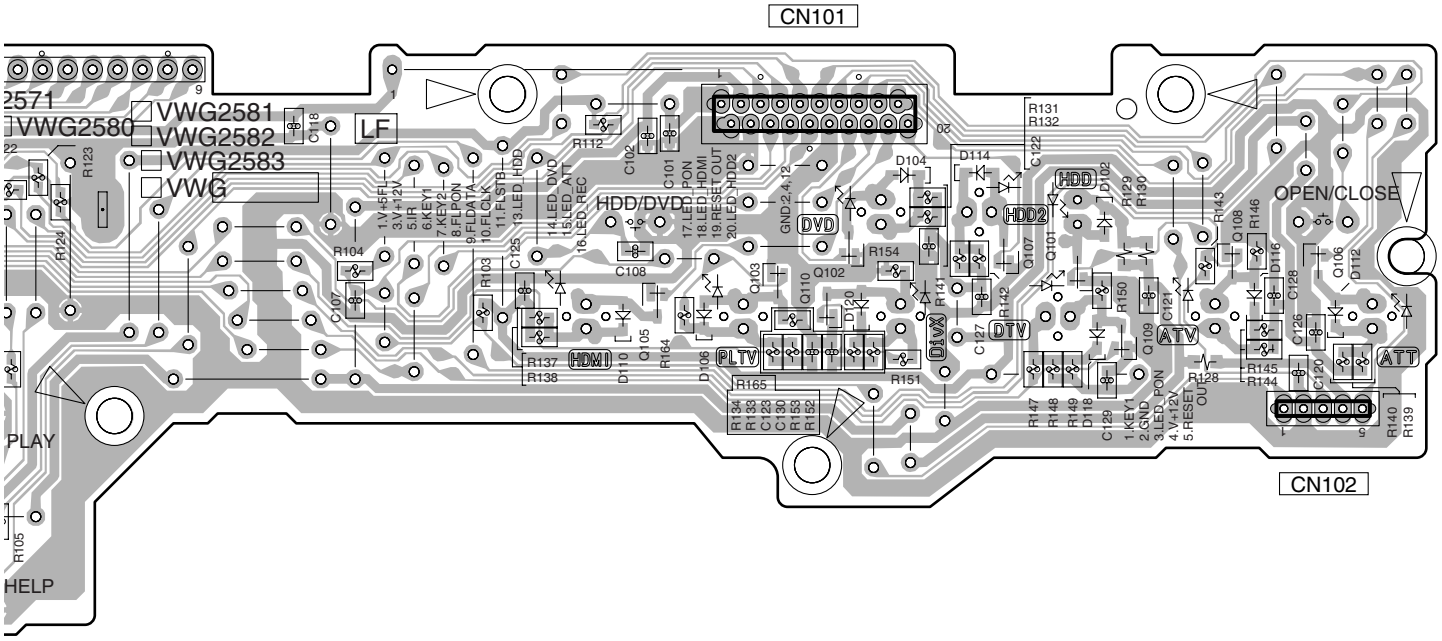
E FLKY ASSY

IC101
Q112 Q108
Q107 Q101
Q102 Q106
Q103 Q110
Q105 Q109
Q111
Q104

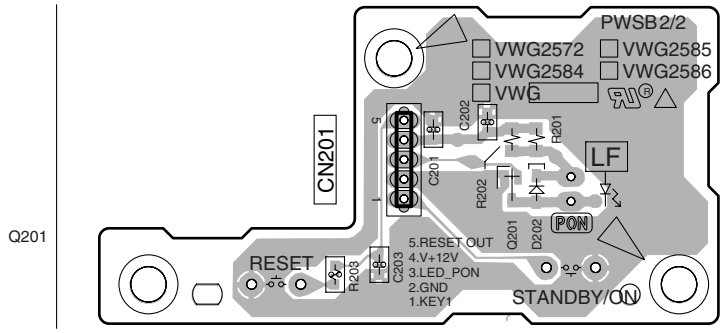


(VNP2047-B)

SIDE B



F PWSB ASSY



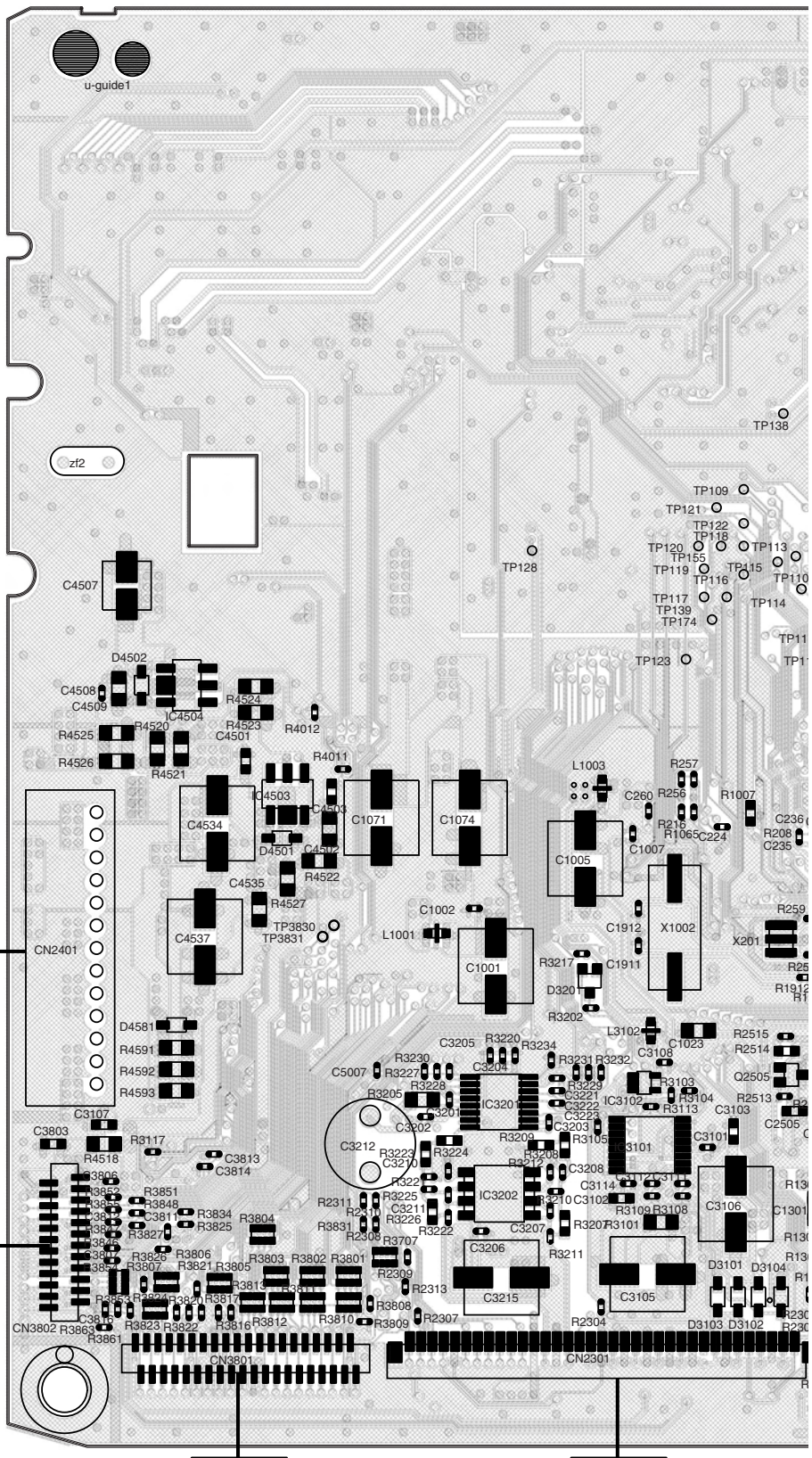
Q201

(VNP2047-B)

4.5 MAIN ASSY

SIDE A

F MAIN ASSY



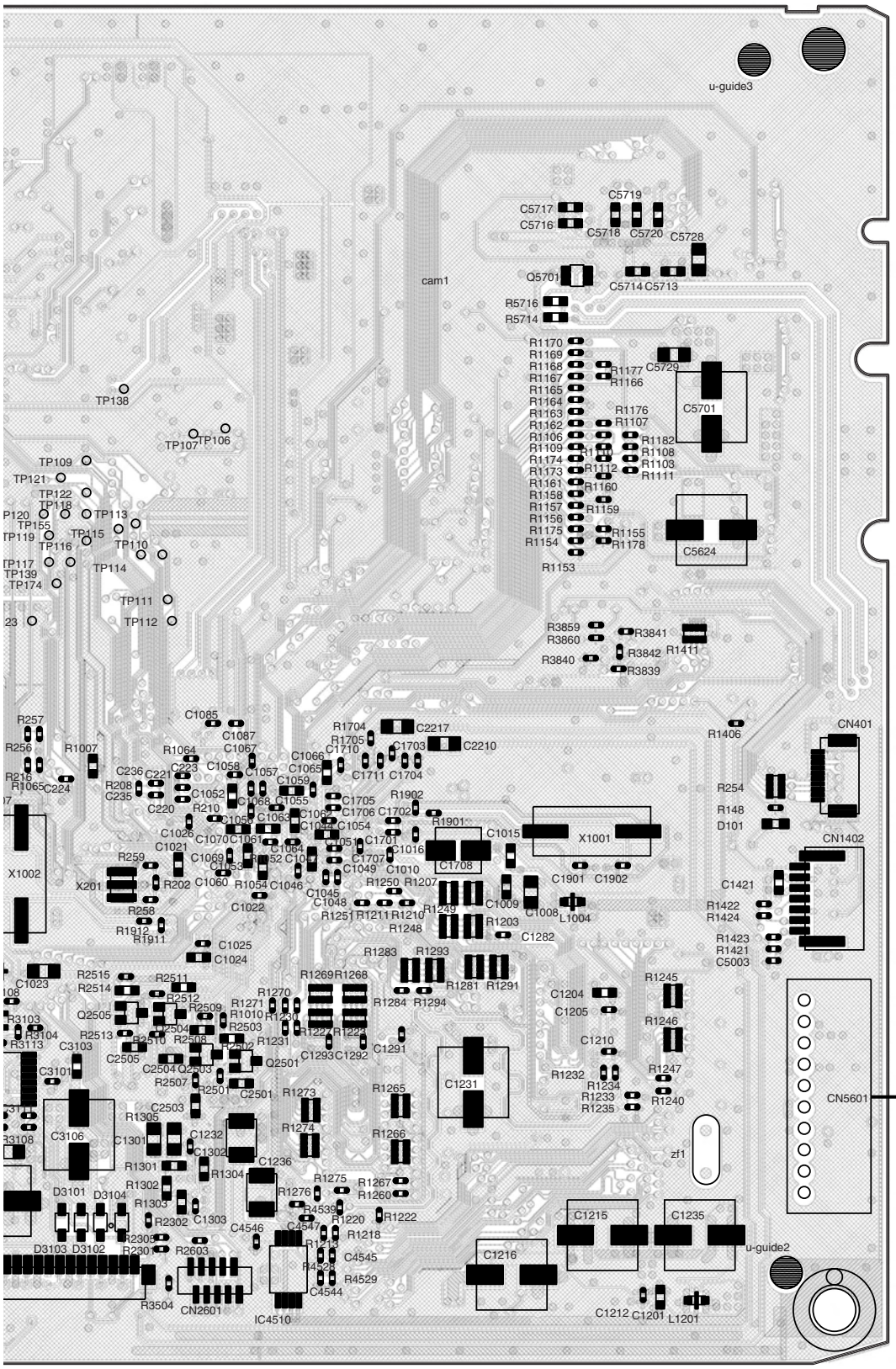
J CN201 ← CN2401

G CN101 ← CN3802

CN3801 → I CN11

CN2301 → A CN4002

SIDE A



(VNP2038-A)

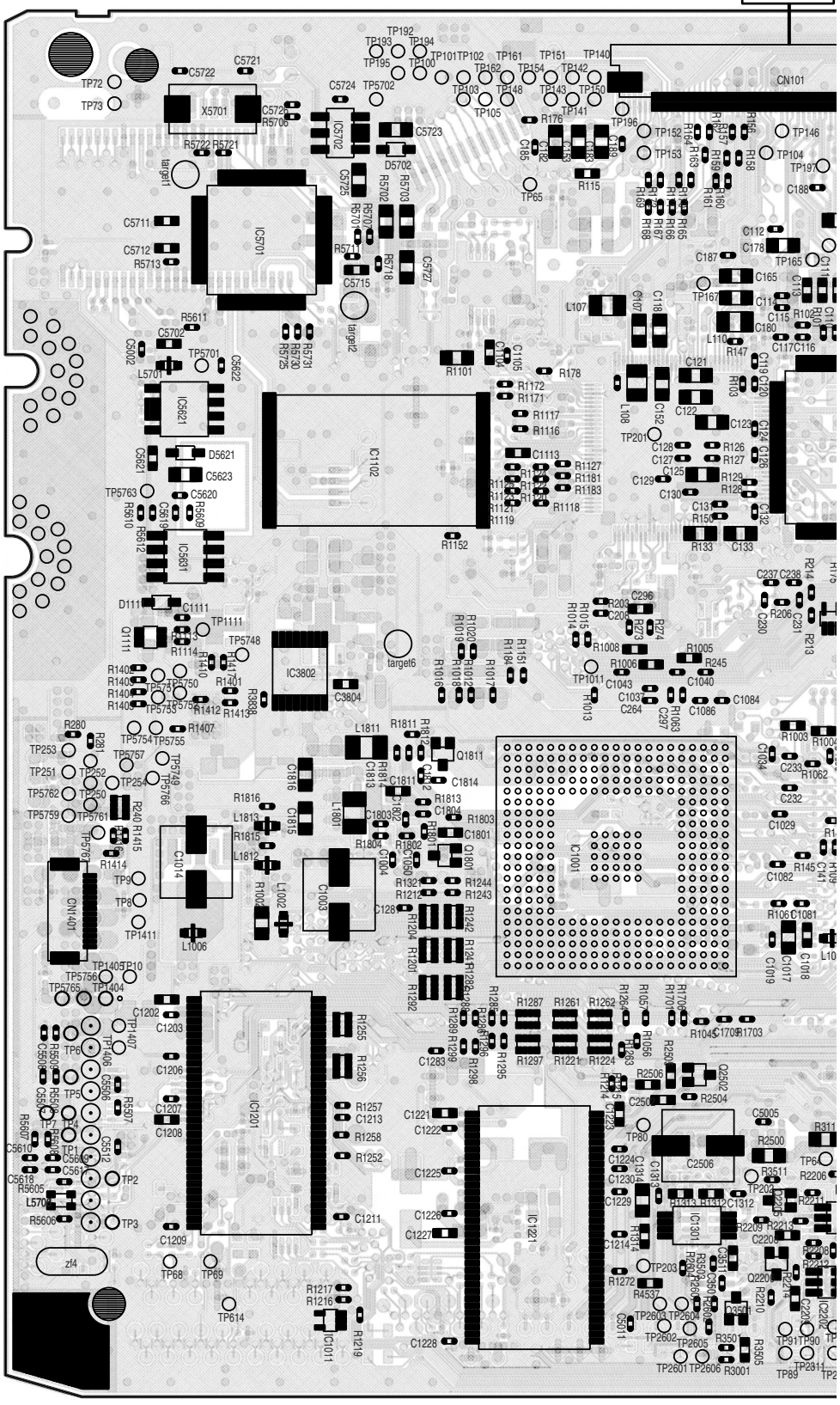
SIDE B

F MAIN ASSY

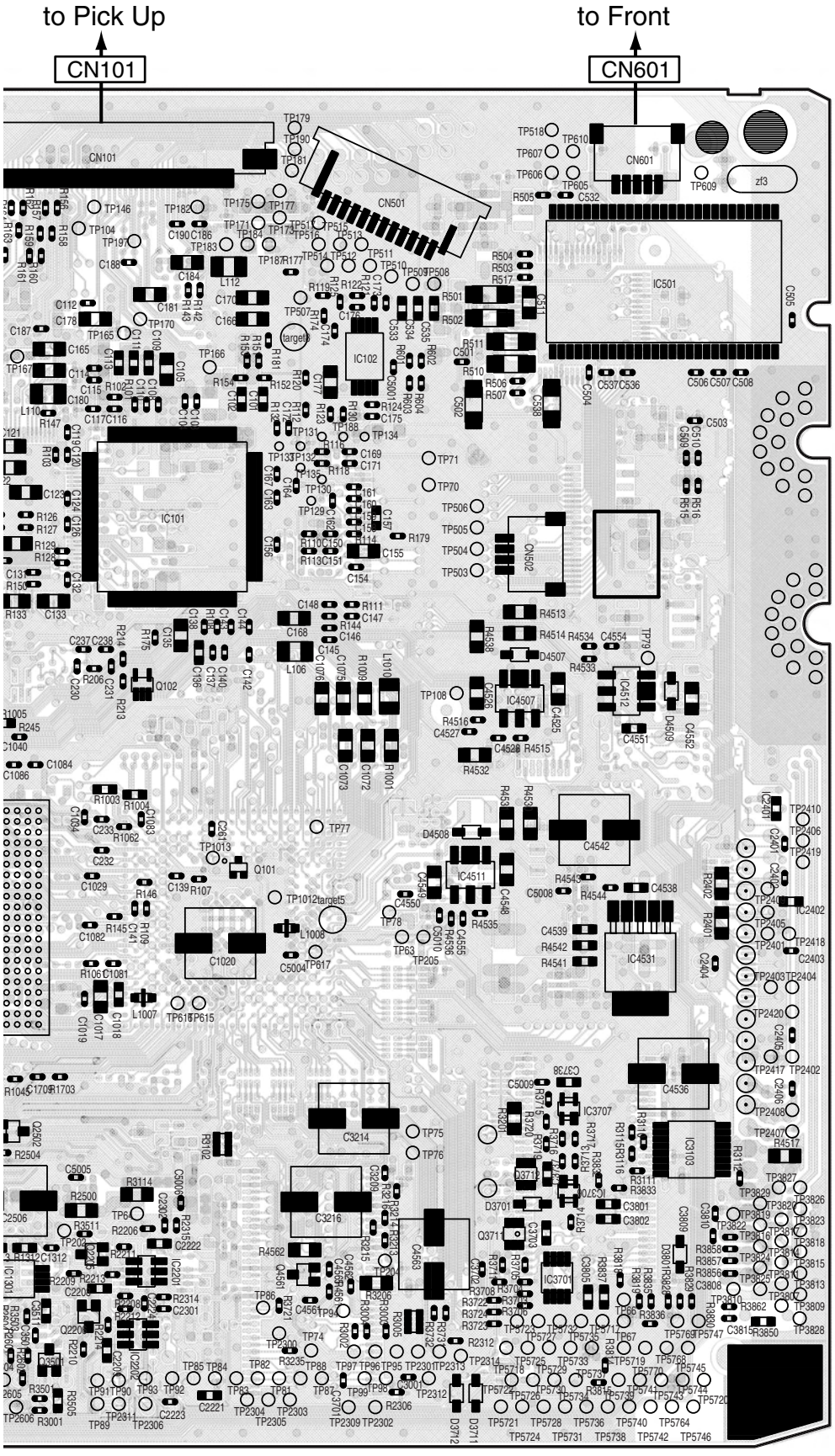
to Pick U

CN101

Q	IC
	IC5702
	IC501
	IC5701
	IC102
	IC5621
	IC101
	IC1102
	IC5631
	IC4512
Q1111	IC4507
	IC3802
Q1811	
	IC4511
Q1801	IC1001
	IC4531
Q2502	
	IC3103
Q3712	IC1201
Q3711	
Q4561	IC2201
	IC1221 IC3701
	IC1301
Q3501	IC2202



SIDE B



(VNP2038-B)

4.6 ATAB ASSY

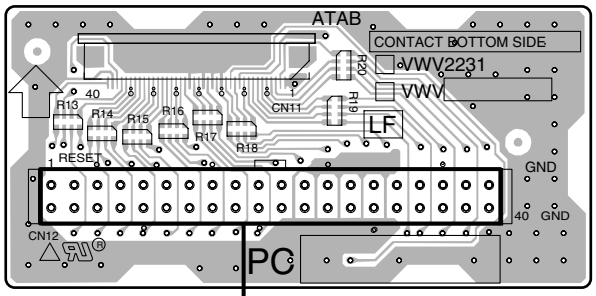
SIDE A

SIDE A

A

B

H ATAB ASSY



CN12

(VNP2045-B)

G CN3801

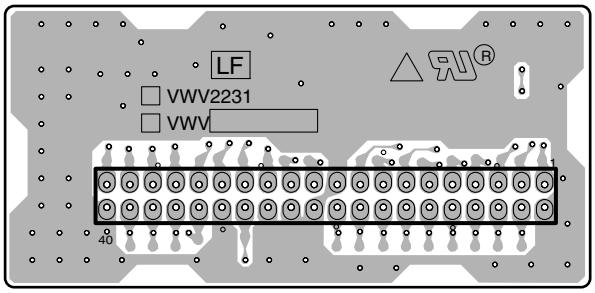
C

SIDE B

SIDE B

D

H ATAB ASSY



CN12

(VNP2045-B)

E

F

H

H

A

B

C

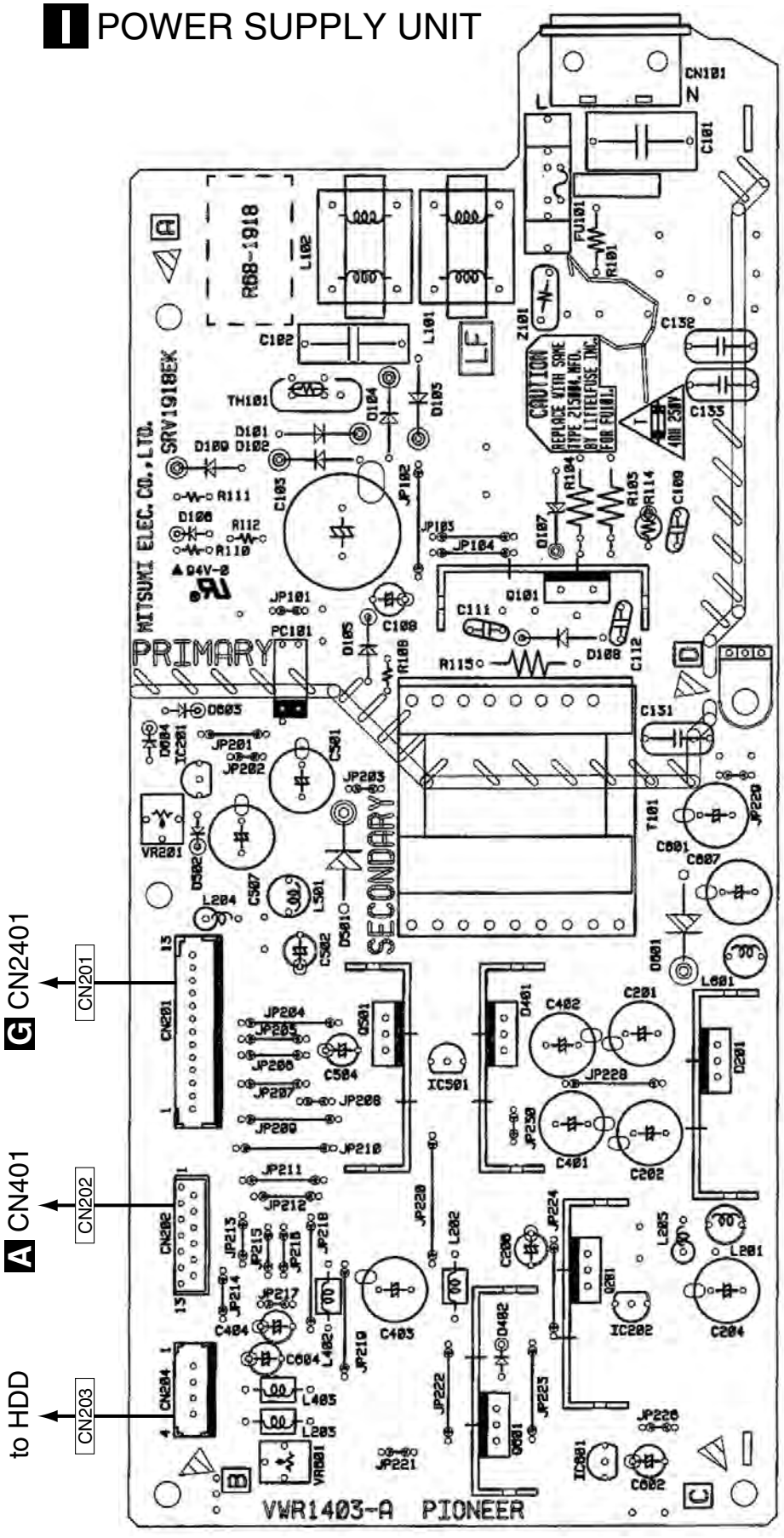
D

E

F

4.7 POWER SUPPLY UNIT

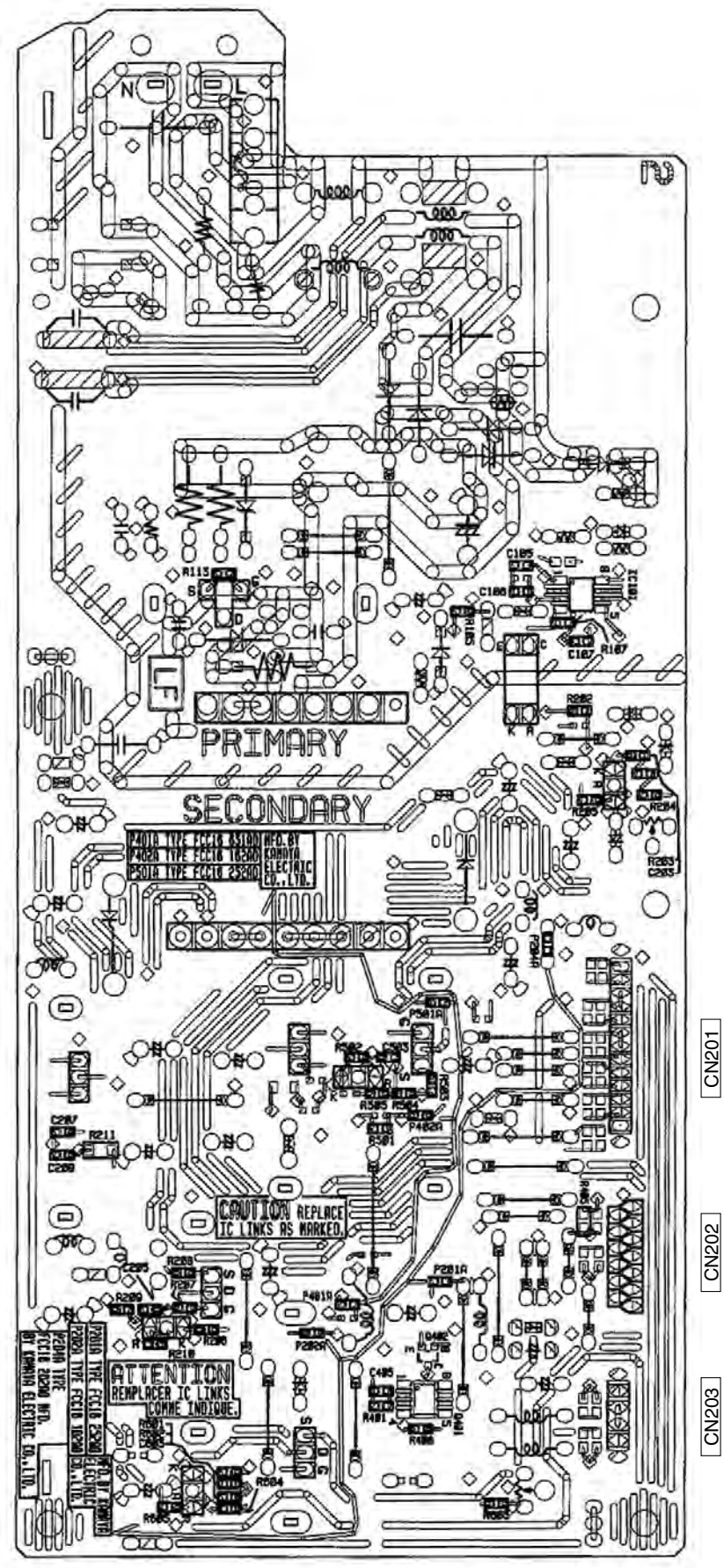
SIDE A **SIDE A**



SIDE B

POWER SUPPLY UNIT

SIDE B



5. PCB PARTS LIST

NOTES: ● *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
● *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
● *When ordering resistors, first convert resistance values into code form as shown in the following examples.*
Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560 Ω	→ *56 x 10[1]* →	*561*	*RD1/4PU 5 6 1 J*
47k Ω	→ *47 x 10[3]* →	*473*	*RD1/4PU 4 7 3 J*
0.5 Ω	→ *R50*		*RN2H R 5 0 K*
1 Ω	→ *1R0*		*RS1P 1 R 0 K*

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62k Ω	→ *562 x 10[1]* →	*5621*	*RN1/4PC 5 6 2 1 F*

LIST OF ASSEMBLIES

Mark	No.	Description	Part No.
	1	TUNB ASSY	VWV2229
	1	DTBR ASSY	VWV2228
	1	JACB ASSY	VWM2392
NSP	2	JACB ASSY	VWV2230
NSP	2	ATAB ASSY	VWV2231
NSP	1	FLKB ASSY	VWM2393
	2	FLKY ASSY	VWG2571
	2	PWSB ASSY	VWG2572
	2	FRJB ASSY	VWV2232
	1	MAIN ASSY (for Service)	VXX3159
⚠	1	POWER SUPPLY UNIT	VWR1403

A JACB ASSY.

SEMICONDUCTORS

Mark	No.	Description	Part No.
	IC0505		BA4560RF
	IC0102		BD4846G
	IC0511		BH7236AF
	IC0103		BU4220G
⚠	IC0401		CEK1278
	IC0501		HA118326APFR
	IC0509		LA7213
	IC0503		MM1501XN
	IC0502, IC0504		MM1503XN
	IC0301		PDF015A
	IC0101		PMC008A8
	IC0508		SN74AHC2G53HDCT
	IC0513		TC4W53FU
	IC0510		TC74HC123AF
	IC0512		TC7SU04FU
	Q0406, Q0412, Q0415		2SA1036K
	Q0306, Q0503, Q0504, Q0510, Q0518		2SA1576A
	Q0521, Q0523		2SA1576A
	Q0408, Q0413, Q0416		2SC2411K
	Q0102, Q0111, Q0112, Q0305, Q0403		2SC4081
	Q0411, Q0511-Q0513, Q0515		2SC4081
	Q0519, Q0520, Q0522		2SC4081
	Q0402		2SC5876
	Q0105, Q0109, Q0303, Q0304, Q0502		2SD2114K
	Q0301, Q0506		DTA124EUA
	Q0110		DTA143EUA
	Q0108		DTC114TUA
	Q0101, Q0302, Q0407, Q0414, Q0417		DTC124EUA
	Q0501		DTC124EUA
	Q0404		HN1A01FU
	Q0514, Q0516, Q0517		HN1C01FU
	Q0507, Q0508		HN1C03FU
	Q0409		RN4903
	Q0103, Q0104		UMD2N
	Q0405		UMF21N
	Q0410		UMF23N
	Q0509		UMH1N
	D0104		1SR154-400
	D0101-D0103, D0106, D0107, D0109		1SS355
	D0301, D0302, D0309, D0403, D0406		1SS355
	D0507, D0510, D0511		1SS355
	D0512, D0513		DAN217U
	D0108		DAP202U
	D0506		UDZS11(B)
	D0401		UDZS15(B)
	D0508, D0509		UDZS5R1(B)
	D0501		UDZS6R8(B)
	D0407		UDZS9R1(B)
	D0514-D0533		UMZ6R8N

COILS AND FILTERS

Mark	No.	Description	Part No.
	L0101	RADIAL INDUCTOR	ATH1109
	L0301	INDUCTOR	CTF1306
	L0506, L0507	INDUCTOR	CTF1388
	L0402	CHIP FERRITE BEADS	CTF1399
	L0508		LAU3R9J
	L0102		LAU470J
	L0505		LAU680J
	L0501, L0503		LCYA150J2520
	L0502, L0504		LCYA180J2520
	L0401		LRCA331J

CAPACITORS

Mark	No.	Description	Part No.
	C0111, C0112, C0149		CCSRCH100D50
	C0315, C0316, C0319, C0567, C0568		CCSRCH101J50
	C0694, C0696, C0698, C0700		CCSRCH102J50
	C0114, C0115		CCSRCH120J50
	C0658		CCSRCH220J50
	C0624, C0625		CCSRCH221J50
	C0651, C0652		CCSRCH270J50
	C0538, C0545		CCSRCH330J50
	C0107, C0656		CCSRCH331J50
	C0145, C0307, C0308, C0605, C0606		CCSRCH471J50
	C0608, C0609, C0613, C0614		CCSRCH471J50
	C0616, C0617, C0693, C0695, C0697		CCSRCH471J50
	C0699		CCSRCH471J50

Mark No.	Description	Part No.
C0540, C0547		CCSRCH680J50
C0321		CCSRCH681J50
C0537, C0544		CCSRCH7R0D50
C0539, C0546		CCSRCH820J50
C0536, C0543		CCSRCJ3R0C50
C0563, C0564		CEANP4R7M50
C0412, C0424, C0514, C0577, C0578		CEAT100M50
C0417, C0419, C0437, C0439, C0523		CEAT101M10
C0530, C0560, C0579, C0631		CEAT101M10
C0427, C0432, C0434, C0573-C0575		CEAT101M16
C0618		CEAT101M16
C0119, C0123, C0309, C0311, C0312		CEAT102M6R3
C0611, C0629		CEAT102M6R3
C0504		CEAT1R0M50
C0104		CEAT220M25
C0665, C0669		CEAT221M16
C0127, C0301, C0634, C0636, C0639		CEAT221M6R3
C0671		CEAT221M6R3
C0138, C0645		CEAT2R2M50
C0305, C0306		CEAT470M16
C0141		CEAT471M16
C0313, C0314, C0620, C0627, C0628		CEAT471M6R3
C0587, C0604, C0607, C0612, C0615		CEAT4R7M50
C0410		CKSQYF105Z50
C0310, C0509		CKSRYB103K50
C0157, C0421, C0508, C0512		CKSRYB104K16
C0517, C0518, C0525, C0535		CKSRYB104K16
C0557, C0558, C0562, C0653-C0655		CKSRYB104K16
C0110, C0502, C0507, C0510, C0511		CKSRYB105K10
C0513, C0515, C0527-C0529		CKSRYB105K10
C0531-C0534, C0550, C0552		CKSRYB105K10
C0555, C0556, C0583-C0586		CKSRYB105K10
C0589-C0594, C0603		CKSRYB105K10
C0646		CKSRYB221K50
C0105, C0106, C0109, C0120		CKSRYF104Z25
C0124-C0126, C0131-C0135		CKSRYF104Z25
C0139, C0140, C0142, C0144, C0153		CKSRYF104Z25
C0156, C0317, C0322, C0323		CKSRYF104Z25
C0401-C0404, C0420, C0426, C0428		CKSRYF104Z25
C0431, C0433, C0435, C0436, C0438		CKSRYF104Z25
C0441, C0503, C0505, C0516, C0521		CKSRYF104Z25
C0576, C0581, C0582, C0623, C0626		CKSRYF104Z25
C0630, C0632, C0633, C0635		CKSRYF104Z25
C0637, C0638, C0641, C0644, C0648		CKSRYF104Z25
C0650, C0657, C0659, C0662-C0664		CKSRYF104Z25
C0667		CKSRYF104Z25
C0422, C0425		CKSRYF104Z50
C0113, C0121, C0122, C0150, C0152		CKSRYF105Z10
C0519, C0526, C0542, C0549, C0553		CKSRYF105Z10
C0561, C0580, C0588		CKSRYF105Z10
C0647, C0649		CQMBA103J50

RESISTORS

R0554, R0558	RN1/16SE1002D
R0555, R0559	RN1/16SE8201D
R0327, R0410, R0419, R0426-R0432	RS1/10S0R0J
R0515, R0516, R0520, R0545, R0561	RS1/10S0R0J
R0627	RS1/10S0R0J
R0336-R0341, R0590, R0609, R0624	RS1/10S3R9J
R0626, R0630	RS1/10S3R9J
R0420	RS1/10S471J
R0611	RS1/10S561J
R0309-R0314, R0589, R0608, R0623	RS1/10S68R0F
R0625, R0629	RS1/10S68R0F
R0504, R0506, R0511, R0587, R0592	RS1/10S75R0F
R0628, R0631	RS1/10S75R0F
R0633, R0644, R0652	RS1/16S1001F
R0640, R0648, R0657	RS1/16S1002F
R0405, R0662	RS1/16S1203F
R0526, R0527	RS1/16S1800F
R0689	RS1/16S1803F
R0528, R0534	RS1/16S2700F
R0408	RS1/16S2702F
R0517	RS1/16S3304F
R0690	RS1/16S4702F
R0661	RS1/16S4703F
R0641, R0649, R0656	RS1/16S6800F
R0202	RS1/16S7500F
R0642, R0650, R0658	RS1/16S82R0F
Other Resistors	RS1/16S###J

OTHERS

JA0501 RGB CONNECTOR	AKB1316
CN0301 4P MINI DIN SOCKET	AKP7045
CN0104 KR CONNECTOR	B2B-PH-K-S
X0301 (16.000 MHz)	CSS1616
X0101 (15.0 MHz)	CSS1653
CN0105 26P FFC CONNECTOR	HLEM26S-1
JA0304, JA0305 REMOCON JACK	RKN1004
JA0302 6P PINJACK	VKB1233
CN0106 19P FFC CONNECTOR	VKN1250
CN0102 B TO B CONNECTOR	VKN2008
CN0103 9P FFC CONNECTOR	VKN2015
CN0101 35P FFC CONNECTOR	VKN2025
CN0401 B TOB CONNECTOR	VKN2052
KN0101, KN0103, KN0104 WRAPPING TERMINAL	VNF1084
X0102 (32 kHz)	VSS1197
X0501 (4.433619 MHz)	VSS1201

B TUNB ASSY.

SEMICONDUCTORS

IC0801	MSP3417G
Q0801, Q0802, Q0804, Q0805	2SA1576A
Q0803	2SC4081

COILS AND FILTERS

L0804, L0805 INDUCTOR	CTF1306
L0801, L0802, L0807, L0810	CTF1399
L0809	LCYA100J2520
L0808	LCYA101J2520

CAPACITORS

C0817	CCSRCH101J50
C0825, C0826	CCSRCH220J50
C0821, C0822	CCSRCH560J50
C0836, C0839	CCSRCH561J50
C0823, C0824	CCSRCH5R0C50
C0830, C0842	CEAT100M50
C0813, C0815, C0819, C0828, C0831	CEAT101M10
C0802, C0807	CEAT102M6R3

Mark No.	Description	Part No.
C0805		CEAT220M25
C0840		CEAT3R3M50
C0818, C0834, C0837		CKSRYB103K50
C0801, C0806		CKSRYB222K50
C0835, C0838		CKSRYB392K50
C0814, C0816, C0829, C0832, C0833		CKSRYF104Z25
C0841, C0843		CKSRYF104Z25
C0820, C0827		CKSRYF105Z10

RESISTORS

R0821, R0997	RS1/10S0R0J
R0801, R0802	RS1/10S100J
R0803, R0829	RS1/10S120J
Other Resistors	RS1/16S###J

OTHERS

U0801 TV TUNER PACK	VXF1106
CN0801 19P FFC CONNECTOR	VKN1279
KN0802 SCREW PLATE	VNE1948
X0801 (18.432 MHz)	VSS1189

C DTBR ASSY

SEMICONDUCTORS

IC0101	HY57V561620CT-H
IC0104	KA5SDKAS01TSN
IC0304, IC0312	MM1685AN
IC0307	MM1689FH
IC0501	PCM1742KE
IC0313	STV0361L
IC0109	TC74VHC00FTS1
IC0314	TC7WB125FK
IC0311	UPC3221GV
IC0502	UPC4570G2-A
IC0106	UPD61110GM-100UEVA
IC0205	VYW2383
Q0101, Q0102	2SA1576A
Q0301	2SC2411K
Q0305	2SC2412K
Q0103	2SC4081
D0301	1SR154-400
D0304	1SS355
D0302	SM15T6V8A

COILS AND FILTERS

L0304	LCYAR82J2520
F0101-F0107, F0202, F0300-F0302	VTF1091
F0305, F0309-F0313, F0316-F0318	VTF1091
F0504 FERRITE CORE	VTF1091
F0319 SAW FILTER	VTF1188
L0315 CHIP FERRITE BEADS	XTX1001
L0314 CHIP FERRITE BEADS	XTX1003

TRANSFORMERS

T0300	XTX1005

CAPACITORS

C0513, C0516	CCSRCH101J50
C0119	CCSRCH470J50
C0326, C0401	CCSRCH471J50
C0397, C0402	CCSRCH5R0C50
C0512, C0517	CCSRCH681J50
C0148, C0149	CCSRCK2R0C50
C0353, C0378	CEVW100M16
C0123, C0144, C0167, C0307, C0346	CEVW101M16
C0349, C0501, C0503, C0510, C0514	CEVW101M16
C0133, C0151	CEVW1R0M50
C0324	CEVW220M6R3
C0115, C0147, C0211, C0339	CEVW470M16
C0342, C0343, C0366, C0368, C0385	CEVW470M16
C0389, C0395	CEVW470M16
C0508	CKSQYB106K6R3
C0332, C0373, C0392, C0393	CKSQYB225K10
C0404-C0406, C0431	CKSQYB225K10
C0315	CKSQYB475K6R3
C0369	CKSRYB102K50
C0375, C0391, C0408, C0410	CKSRYB103K50
C0384, C0396, C0400, C0409, C0413	CKSRYB104K16
C0301, C0304, C0309, C0340, C0341	CKSRYB105K10
C0388, C0411	CKSRYB105K10
C0528	CKSRYB223K50
C0102-C0104, C0106, C0108-C0110	CKSRYF104Z25
C0112, C0114, C0116, C0118, C0120	CKSRYF104Z25
C0124, C0125, C0127, C0128	CKSRYF104Z25
C0130, C0131, C0134, C0135, C0138	CKSRYF104Z25
C0140-C0142, C0155, C0166, C0168	CKSRYF104Z25
C0212, C0213, C0347, C0348, C0350	CKSRYF104Z25
C0358, C0364, C0379, C0383, C0394	CKSRYF104Z25
C0398, C0399, C0407, C0412	CKSRYF104Z25
C0414-C0418, C0421, C0422, C0502	CKSRYF104Z25
C0504, C0507, C0511, C0515	CKSRYF104Z25
C0522-C0525	CKSRYF104Z25
C0101, C0105, C0107, C0111, C0113	CKSRYF105Z10
C0117, C0121, C0122, C0126, C0129	CKSRYF105Z10
C0132, C0136, C0137, C0303	CKSRYF105Z10

RESISTORS

R0381-R0383	RAB4CQ0R0J
R0185-R0194	RAB4CQ330J
R0239-R0249	RAB4CQ470J
R0511, R0517, R0523	RN1/16SE1002D
R0516	RN1/16SE1201D
R0513, R0518, R0525	RN1/16SE2202D
R0521	RS1/10S0R0J
R0121-R0128	RS1/16S1000F
R0169	RS1/16S1500F
R0168	RS1/16S2200F
R0135	RS1/16S75R0F
R0166, R0167	RS1/16S9100F
Other Resistors	RS1/16S###J

OTHERS

U301 DIGITAL TV TUNER	VXF1100
X0100 (27.000MHz)	BSS1123
X0300 (27MHZ)	XSS1010
JA0101 1P PINJACK	VKB1159
CN0103 B TO B CONNECTOR	VKN2011
CN0102 10P FFC CONNECTOR	VKN2038
KN0301 SCREW PLATE	VNE1948

D FRJB ASSY

SEMICONDUCTORS

Mark No.	Description	Part No.
D0301-D0303		UMZ6R8N
CAPACITORS		
C0306, C0308		CCSRCH471J50
RESISTORS		
Other Resistors		RS1/16S###J
OTHERS		
JA0301	4P MINI DIN SOCKET	AKP1238
CN0301	26P FFC CONNECTOR	HLEM26S-1
JA0302	3P PINJACK	VKB1208
CN0302	14P FFC CONNECTOR	VKN1245
KN0301, KN0302	WRAPPING TERMINAL	VNF1084

E FLKY ASSY

SEMICONDUCTORS		
IC0101		PT6315
Q0112		2SA1576A
Q0113		2SC4081
Q0111		2SC5712
Q0101, Q0102		DTC124EUA
D0122		1SS355
D0124, D0125		RF101L2S
D0101		SLR-343BBT
D0103		SLR-343DC
D0105, D0115, D0117, D0119		SLR-343VC
D0123		UDZS13(B)
D0121		UDZS15(B)
D0126		UDZS2R4(B)
COILS AND FILTERS		
L0102		LAU220J
TRANSFORMERS		
T0101		VTT1171
SWITCHES AND RELAYS		
S0101-S0113		VSG1024
CAPACITORS		
C0137		CEAL100M50
C0105		CEAL101M10
C0135		CEAL101M16
C0131		CEJQ101M16
C0118, C0119, C0134		CKSRYB103K50
C0133		CKSRYB223K50
C0101, C0102, C0106-C0108, C0110		CKSRYF104Z25
C0116, C0121-C0123, C0128-C0130		CKSRYF104Z25
C0132		CKSRYF104Z25
C0112		CKSRYF104Z50
RESISTORS		
R0129, R0130		RS1/10S182J
R0161		RS1/10S221J
Other Resistors		RS1/16S###J
OTHERS		
CN0102	KR CONNECTOR	B2B-PH-K-S
IC0102	REMOTE RECEIVER UNIT	RPM7140-H9
V0101	FLUORESCENT TUBE	VAW1091
CN0101	14P FFC CONNECTOR	VKN1274
	FL HOLDER	VNF1134

Mark No.	Description	Part No.

F PWSB ASSY

SWITCHES AND RELAYS		
S0201		VSG1024
OTHERS		
CN0201	KR CONNECTOR	B2B-PH-K-S

G MAIN ASSY

SEMICONDUCTORS		
IC3101		AK5359ET
IC501		BD7997FS
IC2401, IC2402		CEK1285
IC1201, IC1221 (*) Refer to 7.1.11 (P127)		K4H511638C-UCB3
IC1301		NJM12904V
IC3201		PCM1742KE
IC3707		PST3813U
⚠IC4512		S-1170B25UC-OTK
⚠IC4507, IC4511		S-1170B33UC-OTS
⚠IC4504		S-1170B50UC-OUJ
IC3701		TC7WH34FU
IC101		UPC3345GC-YEB-A
IC3202		UPC4570G2-A
IC1001		UPD61272F1-107KA3A
IC1102		VYW2365
Q1801, Q1811, Q2205, Q2206		2SA1576A
Q2501-Q2505		2SA1576A
Q3501, Q4561		2SC4081
Q101		RT1N141U
D3201		DAN202U
D3711, D3712		RB501V-40
D101		SML-310YT
COILS AND FILTERS		
L1010, L106, L107, L112	CHIP COIL	BTH1103
L1001, L1003, L1004, L1006-L1008		DTL1106
L1201	EMI FILTER	DTL1106
L1811		LCYA150J2520
L1801		LCYA390J2520
CAPACITORS		
C1081		CCSSCH100D50
C158-C162, C1813		CCSSCH101J50
C3207, C3211		CCSSCH121J50
C1902, C1911		CCSSCH150J50
C1812		CCSSCH151J50
C1901, C1912		CCSSCH180J50
C1803		CCSSCH221J50
C169, C171, C509		CCSSCH390J50
C3501		CCSSCH470J50
C1084-C1087		CCSSCH5R0C50
C510		CCSSCH620J50
C264		CCSSCH680J50
C3212		CEAT102M6R3
C1708, C4507		CEVW100M16
C2506, C3106, C3214, C3216, C4542		CEVW101M16
C4563		CEVW101M16
C1001, C1003, C1005, C1014, C1020		CEVW221M4
C1071, C1074, C1235		CEVW221M4
C511		CKSQYB105K16
C105, C1073, C1076, C121-C123		CKSQYB475K6R3
C125, C133, C135, C152, C153		CKSQYB475K6R3

Mark	No.	Description	Part No.
	C155, C165, C168, C178, C181		CKSQYB475K6R3
	C184, C4508, C4525, C4526		CKSQYB475K6R3
	C4548, C4549, C4552		CKSQYB475K6R3
A	C157, C4551		CKSRYB105K10
	C109, C111		CKSRYB334K10
	C101, C102, C136		CKSRYB474K10
	C1009, C1015, C1018, C1021, C1024		CKSRYF105Z10
	C1044, C1047, C1052, C1055		CKSRYF105Z10
	C1061, C1062, C1065, C1070, C1113		CKSRYF105Z10
	C1202, C1204, C1208, C1221, C1223		CKSRYF105Z10
	C1227, C1421, C1801, C1811		CKSRYF105Z10
	C2208, C2209, C2501, C296		CKSRYF105Z10
	C3102, C3103, C3511, C3703, C3738		CKSRYF105Z10
	C3801-C3805		CKSRYF105Z10
B	C1010, C1016, C1019, C1022, C1025		CKSSYB102K50
	C1046, C1049, C1054, C1057, C1059		CKSSYB102K50
	C1064, C1067, C1068, C1207		CKSSYB102K50
	C1209, C1210, C1226, C1228, C1229		CKSSYB102K50
	C151, C189, C261, C4527, C4550		CKSSYB102K50
	C119, C1205, C1206, C1224, C1225		CKSSYB103K16
	C129, C130, C142, C164, C1709		CKSSYB103K16
	C187, C188, C221, C3701, C4509		CKSSYB103K16
	C1026, C1029, C103, C1034, C1037		CKSSYB104K10
	C104, C1040, C1043, C112, C117		CKSSYB104K10
C	C124, C126-C128, C132		CKSSYB104K10
	C143, C144, C150, C156, C163		CKSSYB104K10
	C167, C172, C175, C2301, C2302		CKSSYB104K10
	C260, C3806, C504, C505		CKSSYB104K10
	C137		CKSSYB182K50
	C145, C146		CKSSYB222K50
	C224, C230, C231		CKSSYB223K16
	C108, C110, C139, C141, C1802		CKSSYB331K50
	C3204		CKSSYB331K50
	C114		CKSSYB332K50
	C116		CKSSYB333K10
D	C232, C233		CKSSYB471K50
	C148, C220, C223		CKSSYB472K25
	C147, C1804, C1814, C532		CKSSYB473K10
	C297, C3208, C3210		CKSSYB681K50
	C138		CKSSYB682K25
	C154, C236		CKSSYB683K10
	C115		CKSSYB822K16
	C1002, C1004, C1007, C1045, C1048		CKSSYF104Z16
	C1050, C1051, C1053, C1056, C1058		CKSSYF104Z16
	C1060, C1063, C1066, C1069, C1082		CKSSYF104Z16
	C1105, C1203, C1211-C1214, C1222		CKSSYF104Z16
E	C1230, C1302, C1303, C1312, C1313		CKSSYF104Z16
	C1701-C1707, C2401-C2406, C3101		CKSSYF104Z16
	C3201-C3203, C3206, C3209		CKSSYF104Z16
	C4561, C4562, C4565, C501, C503		CKSSYF104Z16
	C113 (2.2/10)		DCG1040
	C502 (10/16)		DCH1165
	C1008, C1017, C107, C1075, C118		DCH1201
	C2210, C2217 (10/10)		DCH1201
	C1215 (150/4)		VCH1246
F	**RESISTORS**		
	R501 (0.47/1/4W)		DCN1160
	R502 (0.68/1/4W)		DCN1162
	R1411, R240, R3005, R3102, R3707		RAB4CQ103J

Mark	No.	Description	Part No.
	R3801-R3806		RAB4CQ223J
	R1245, R1246, R1255, R1256		RAB4CQ330J
	R1265, R1266, R1273, R1274		RAB4CQ330J
	R3810-R3813, R3824		RAB4CQ330J
	R254		RAB4CQ473J
	R1241, R1242, R1248, R1249		RAB4CQ560J
	R1261, R1262, R1268, R1269		RAB4CQ560J
	R1281-R1283, R1287		RAB4CQ560J
	R3208, R3223		RN1/16SC56R0D
	R3207, R3226		RN1/16SE1502D
	R3209, R3224		RN1/16SE8201D
	R1001, R1002, R133, R2401		RS1/10S0R0J
	R4513, R4514, R4520-R4524, R4527		RS1/10S0R0J
	R4591-R4593		RS1/10S0R0J
	R1302, R1303, R1312, R1313		RS1/16S1001F
	R2502, R2505, R2508, R2511, R2514		RS1/16S2000F
	R1301		RS1/16S4700F
	R1052		RS1/16S6200F
	R3505		RS1/16S75R0F
	R1054		RS1/16S9100F
	R181		RS1/16SS4701F
	R510, R511		RS1/4SA2R0J
	Other Resistors		RS1/16S###J
	OTHERS		
	CN502 4P CONNECTOR		DKN1288
	CN501 CONNECTOR		DKN1312
	CN601 5P CONNECTOR		DKN1402
	CN101 CONNECTOR		DKN1404
	X201 (16.93MHz) OSC		DSS1152
	CN1402 07P CONNECTOR		RKN1048
	CN2401 KR CONNECTOR		S13B-PH-K
	CN2301 35P CONNECTOR		VKN1439
	CN401 CONNECTOR		VKN2029
	CN1401 CONNECTOR		VKN2030
	CN2601 CONNECTOR		VKN2038
	CN3801 CONNECTOR		VKN2050
	X1002 (27 MHz) CRYSTAL		VSS1191
	X1001 (24.576 MHz) CRYSTAL		VSS1192

H ATAB ASSY

	RESISTORS		
	R13-R20		RAB4C0R0J
	OTHERS		
	CN12 40P ATA CONECTOR		VKN1816
	CN11 40P CONNECTOR		VKN1818

I POWER SUPPLY UNIT

POWER SUPPLY UNIT has no service part.

6. ADJUSTMENT

[Purpose]

If the combination of MAIN Assy and LOADER Assy is changed, the adjusted value for LD power will be shifted, and stable playback or recording of a disc will become impossible. Therefore, when the combination of MAIN Assy and LOADER Assy is changed, LD power adjustment and adjustment for disc judgment will be necessary.
Be sure to do this adjustment at following cases.

- When replacing MAIN Assy
- When replacing LOADER Assy

[Tools to be used]

- Special tool for adjusting the LD power (GGF1559)
- 10-pin FFC flexible cable (GGD1477)
- CD-ROM test disc: CDT-313 (GGV1054)
- DVD dual-layer test disc: DVDT-002 (GGV1036)

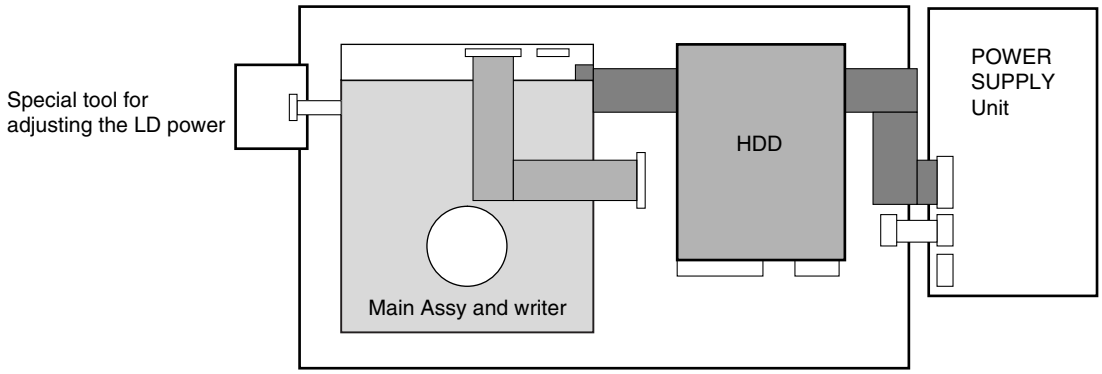
[Notes]

Never turn the power off while any of the following operations is in progress:

- While laser diode (LD) power adjustment is being performed normally by the unit
- While adjustment for disc judgment is being performed

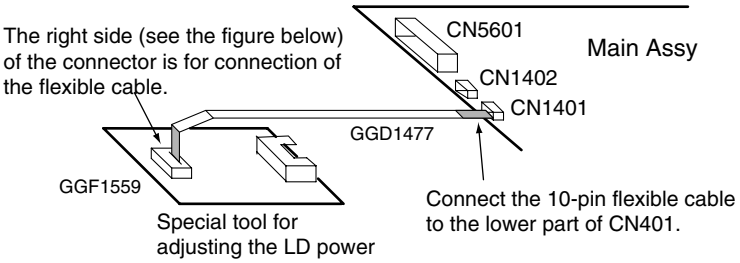
[Connections]

- Connections for adjusting the LD power

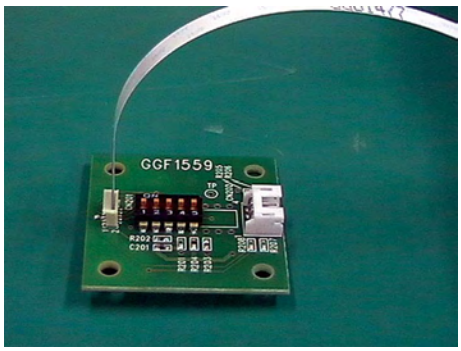


Note: Before adjusting the LD power, disconnect the power to the HDD and the flexible cable for ATA (40-pin).

- To which the special tool for adjusting the LD power is connected



- Setting of the switches on the special tool for adjusting the LD power



GGF1559

Set all five switches to ON.

[Procedures]

1. Connect the special tool for adjusting the LD power, as shown on the previous page.

2. Turn on the DVD recorder. ("POWER ON" will be indicated on the FL display.)

3. The tray opens.
   Make sure that powered opening of the tray is working.
   If the tray does not open under power:
   a. Flexible cables or other cables may not be connected. (Connection of cables to the HDD is not necessary.)
   b. Wrong setting of the switches on the special tool for adjusting the LD power, or failure in the special tool or the 10-pin flexible cable, is suspected.
   c. Failure in the loader, MAIN Assy, or POWER SUPPLY Unit is suspected.

   Make sure that the LED next to CN401 is lit.
   If the LED flashes:
   a. Wrong setting of the switches on the special tool for adjusting the LD power, or failure in the special tool or the 10-pin flexible cable, is suspected.

4. Manually close the tray. Adjust the LD power.
   Make sure that the LED next to CN401 is lit.
   If the LED flashes three or four times in a burst:
   a. The PU flexible cable may not be connected.
   b. Failure in the Traverse Mechanism or MAIN Assy is suspected.

5. After adjusting the LD power, invoke powered opening of the tray. *(LD power adjusting time : about 60 sec.)*
   Make sure that the LED next to CN401 flashes once per burst.

6. Load the DVDT-002 on the tray.
   The tray automatically closes after 15 seconds.
   The tray repeatedly closes and opens automatically until a disc is loaded.

7. After adjustment for judging the DVD disc, the tray automatically opens.
   Make sure that the LED next to CN401 flashes twice in a burst. *(DVD disc discrimination adjusting time : about 25 sec.)*
   If the LED flashes only once per burst:
   a. A disc other than the DVDT-002 may be loaded. Be sure to load the DVDT-002.

8. Replace the DVDT-002 with the CDT-313.
   The tray automatically closes after 15 seconds.
   The tray repeatedly closes and opens automatically until a disc is loaded.

9. After adjustment for judging the CD disc, the tray automatically opens.
   Make sure that the LED next to CN401 is unlit. *(CD disc discrimination adjusting time : about 25 sec.)*
   If the LED flashes twice in a burst:
   a. A disc other than the CDT-313 may be loaded. Be sure to load the CDT-313.

10. Unload the CDT-313 and manually close the tray.

11. Turn off the recorder by holding the POWER button pressed for several seconds.

12. Disconnect the 10-pin FFC cable from the MAIN Assy.

13. Set the power sources for the HDD and the flexible connecting cable for ATA (40-pin) to their original statuses.

[Points to be confirmed]

1. Make sure that real-time recording on a DVD-R/-RW/RAM will finish normally.
2. Play back a recorded disc and make sure that playback is performed without a problem.

7. GENERAL INFORMATION

7.1 DIAGNOSIS

◆ Jigs and Tools to be used

Remote control unit for serving (GGF1381)
DVD Recorder Data Disc (Type 2)(*)
Download disc
Test disc (GGV1025)
DVD-RW (Commercial goods)

(*) Be sure to use the latest disc (Type 2).
In April, 2006, the latest disc is GGV1238.

◆ Service Mode List

1. Setting type

Item	When to perform
7.1.1 Model setting	• When replacing MAIN ASSY or JACB ASSY.
7.1.2 CPRM ID number and data	• When "CPRM ERROR" is displayed on the display screen. • After the MAIN ASSY or HDD replaced.
7.1.3 Firmware downloading method	• After model setting (After replacing MAIN ASSY, JACB ASSY). • After the HDD is replaced. • When NG is displayed for the version infomation in Service mode.
7.1.4 Video Adjustment for Specific Area	• When a flicker appears on the tuner display like a horizontal or vertial out-of-sync symptom
7.1.5 (5) OSD Filter Setting	• When a character flicker appears on the OSD depending on the monitor.

2. Diagnosis type

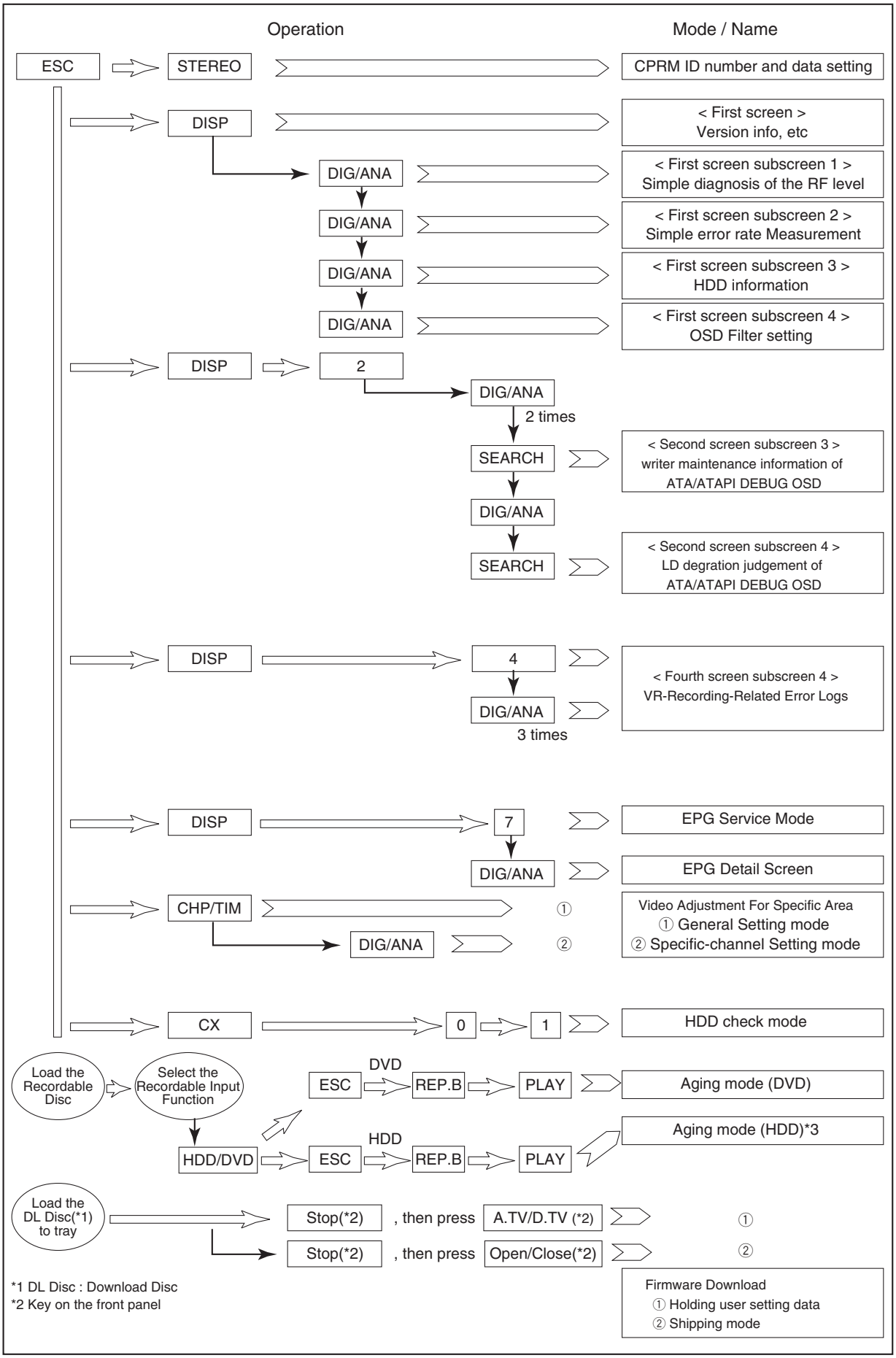
7.1.5 Service Mode First screen : Version, Simple diagnosis of the RF level, Simple error rate measurement, HDD information. Second screen : ATA/ATAPI debug screen, LD degration judgement Fourth screen : VR-recording-related error loss	• When confirming version infomation • When confirming the state of LOADER Assy.
7.1.6 EPG Service Mode	When EPG data cannnot be or can be only partially obtained.
7.1.7 Aging Mode	When a claimed sympton is difficult to reproduce.
7.1.8 HDD Check Mode	When checking the quality of HDD.

◆ Necessary procedure List when replacing Assys

Following is the surely necessary procedures and the produet state after changing when replacing next ASSYs.

Replaced ASSY	Necessary setting	State after replacing	
		User setting	HDD contents
MAIN ASSY JACB ASSY	1. Model setting 2. LD power adjustment 3. CPRM setting 4. Firmwave download	×	○
HDD	1. CPRM setting 2. Firmwave download	○	×

◆SERVICE MODE MAP



7.1.1 MODEL SETTING

[Purposes]

When the MAIN Assy and/or TUJB Assy that are(is) commonly used with another model are(is) replaced, they(it) must recognize the model of this unit.

Items to be set: The model number, destination, and region No. must be set.

[Tool to be used]

Remote control unit for servicing
(GGF1381)

[Notes]

- Once the setting has been made, it can never be changed. Be sure to make the setting correctly.
- As this setting resets the Assy(s) in question to the factory-preset status, it is recommended that you obtain the customer's consent beforehand.

[Procedures]

① After power on, the following screen is displayed on TV monitor. Press four digits properly (for example " 0133 ") by using the remote control unit for service, according to the screen information.

```
[Recorder's Model Setting]
 Input the number using the remote for Service.

> - - -

  Input No.     Model
   [ 0132  :  DVR-540HX/WYXK5 ]
   [ 0133  :  DVR-540HX/WVXK5 ]
   [ 0232  :  DVR-540HX/YXKSN5 ]
   [ 0233  :  DVR-440HX/WVXK5 ]
```

② Disconnect then reconnect the AC power cord of the unit. Be careful not to impart vibration to the unit immediately after the AC power cord is disconnected.

③ Reset the recorder to all its factory settings.
(Make sure that the recorder is on. Press and hold ■ (STOP) key and press ⏻ (STANDBY/ON) key on the front panel.)
The recorder turns off with all settings reset.

④ Press [ESC] then [DISP] keys by using the remote control unit for servicing, and then confirm each Model Name (for example " DVR-540HX/WV ").

```
DVR-540HX/WV        VERSION : 1.**
  SYSCON    : RELEASE_100
              Rev     :1.1000
TUNERCON    : 198.000                    OK
    DRIVE   : DVD-RW DVR-L11X            OK
              1.00                       OK

     HDD    : WDC WD1600BB-xxGUCx        160

  IRCON     : 1.00                       OK

  DEVICE    : E2R-FE  1.2     FLASH  : 64M
  REGION    : 2               C : **********
  DTB  H : 410                DTB  S :100a   OK
```

⑤ End

7.1.2 CPRM ID NUMBER AND DATA SETTING

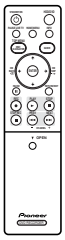
[Purposes]

For the DVD recorder,it is necessary with the recoding/playback of DVD–RW disc to set an individual number (ID number) and ID data to each recorder. If the number and data are not set correctly with the following procedure, cannot work with residual quantity 0:00 or operations in the future may not be guaranteed with RW disc. You will find the ID number to be set on the ID label on the rear panel.

The Input is Necessary When:

- " CPRM ERR" is displayed on the FL display immediately after the power is turned on or in Stop mode.
- When the MAIN ASSY or the HDD is exchanged.

[Tools to be used]



Remote control unit supplied with the unit (VXX3092)

Remote control unit for servicing (GGF1381)

DVD Recorder Data Disc (Type 2)

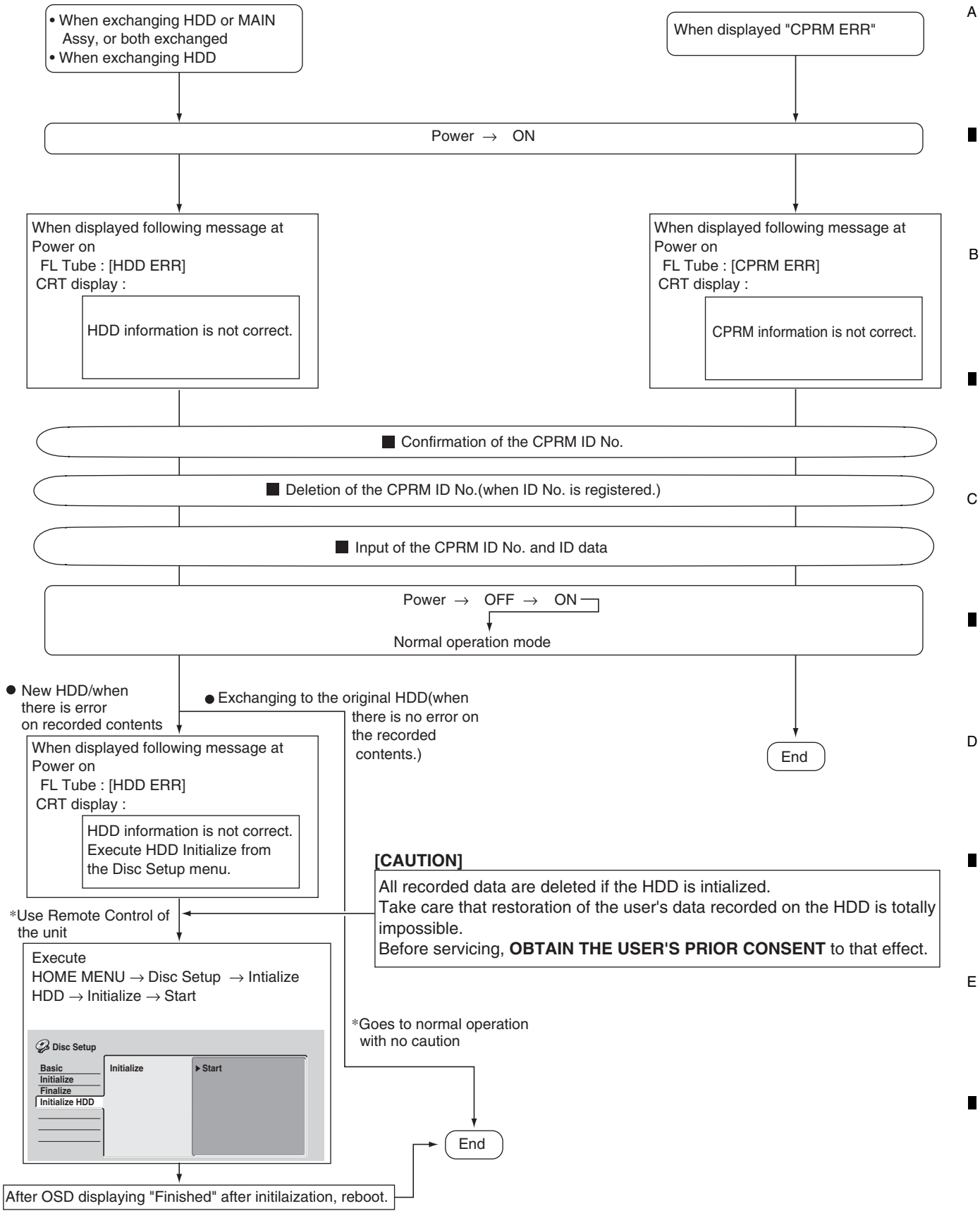
Be sure to use the latest disc (Type 2).
In May, 2006, the latest disc is GGV1273.

[Notes]

Important: If no ID label is found on the rear panel, write down the specified ID number by checking it according to "How to confirm the ID number" shown below.

- Input the ID number while the unit is in Stop mode.
- After the data are read from the data disc (Type 2), the disc will automatically be unloaded.

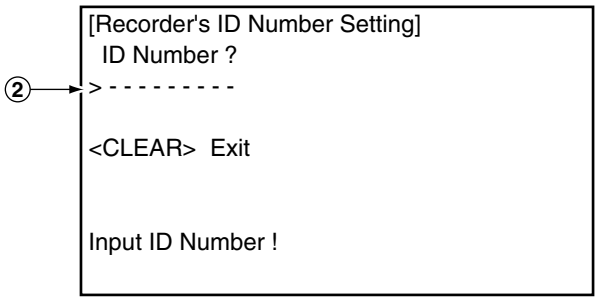
■ Input Flow of the ID No. and ID data when exchanging HDD or MAIN Assy


• When exchanging HDD or MAIN Assy, or both exchanged
• When exchanging HDD
When displayed "CPRM ERR"
Power → ON
When displayed following message at Power on
FL Tube : [HDD ERR]
CRT display :
HDD information is not correct.
When displayed following message at Power on
FL Tube : [CPRM ERR]
CRT display :
CPRM information is not correct.
■ Confirmation of the CPRM ID No.
■ Deletion of the CPRM ID No.(when ID No. is registered.)
■ Input of the CPRM ID No. and ID data
Power → OFF → ON
Normal operation mode
● New HDD/when there is error on recorded contents
● Exchanging to the original HDD(when there is no error on the recorded contents.)
End
When displayed following message at Power on
FL Tube : [HDD ERR]
CRT display :
HDD information is not correct.
Execute HDD Initialize from the Disc Setup menu.
[CAUTION]
All recorded data are deleted if the HDD is intialized.
Take care that restoration of the user's data recorded on the HDD is totally impossible.
Before servicing, OBTAIN THE USER'S PRIOR CONSENT to that effect.
*Use Remote Control of the unit
Execute
HOME MENU → Disc Setup → Intialize
HDD → Initialize → Start
*Goes to normal operation with no caution
Disc Setup
Basic
Initialize
Finalize
Initialize HDD
Initialize
Start
End
After OSD displaying "Finished" after initilaization, reboot.

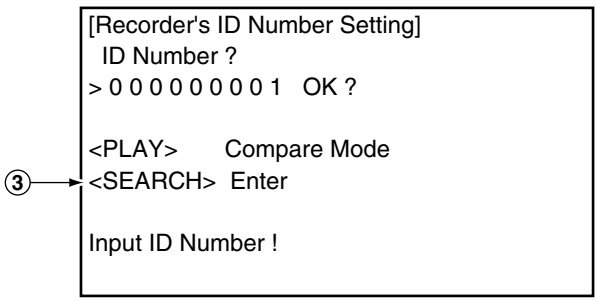
How to Input the ID Number and ID Data

① To enter the input mode, press ESC + STEREO keys sequentially in a status with no ID number set, such as after FLASH-ROM downloading.

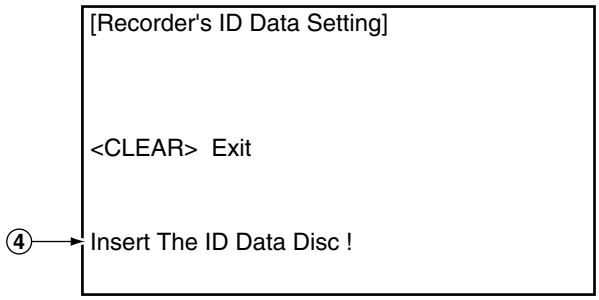
② As number input is enabled when the unit enters the input mode, input the 9-digit ID number.
(The entered number is also displayed on the FL display.)



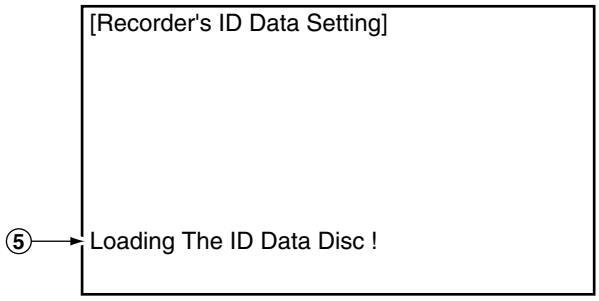
③ After inputting the number, press SEARCH keys to register the ID number.



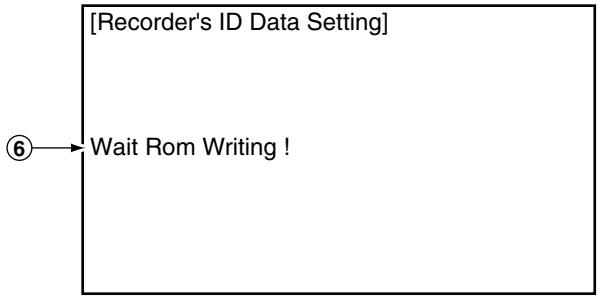
④ When the ID number has been registered, the unit enters the ID data input mode. (The FL display indicates "INSERT ID.")
In this condition, place the ID data disc on the tray and close the tray using the CLOSE key "■/⏏" on the player.



⑤ While the data are being read, the message shown in the figure at left is displayed on the screen.
(The FL display indicates "LOAD ID.")

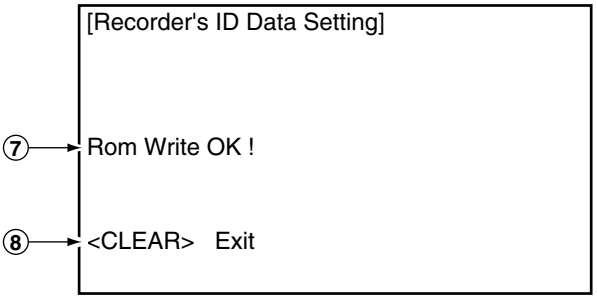


⑥ When the ID data have been read, the data are written to the FLASH-ROM.
(The FL display indicates "WRITE ID.")



⑦ When the ID data have been written to the FLASH-ROM, the message "Rom Write OK" is displayed on the screen.
(The FL display indicates "ID OK.")

⑧ After confirming this message, press CLEAR key to exit the input mode.

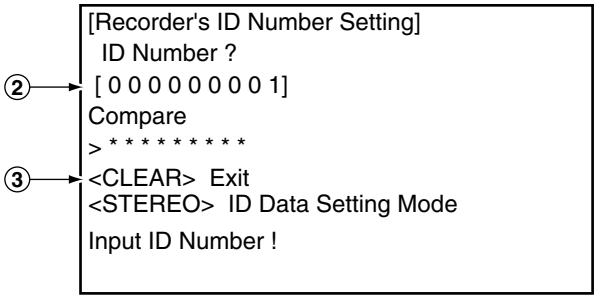


[How to Confirm the ID Number]

① Press ESC + STEREO keys sequentially with an ID number already set, and the unit enters the ID number confirmation mode.

② The set ID number is displayed on the screen (and on the FL display), permitting you to confirm it.

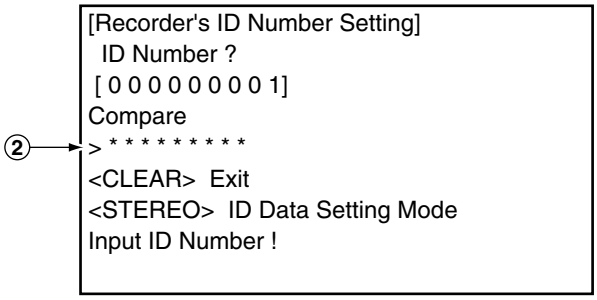
③ To exit this mode, press CLEAR key.



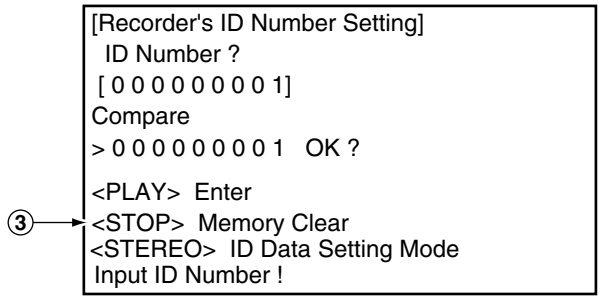
[How to Clear the ID Number]

① Press ESC + STEREO keys sequentially with an ID number already set, and the unit enters the ID number confirmation mode.

② Input the same number as the ID number you have set.



③ After inputting the number, press STOP key.
Only when the entered number matches the set ID number, the ID number is cleared and the unit exits this mode.
If the numbers do not match, you must return to step ②.
(STOP key is not accepted until 9 digits are entered.)



7.1.3 FIRMWARE DOWNLOADING METHOD

[Purposes]

1. When the main board is replaced, the firmware versions for the system control computer, drive, IR microcomputer and the TUFL microcomputer do not match, and operations of the unit may be destabilized.
   To match the versions for the above four, firmware downloading is necessary in the following two cases:
   ① After the model setting
   ② When NG is displayed on the first screen (version information, etc.) of Service mode
   ③ After changing MAIN Assy or TUJB Assy

2. Rewriting the firmware to the latest version may ameliorate the symptoms claimed by the customer.

There are the following two methods for downloading: disc download and serial download

1. DISC DOWNLOAD

[Tools to be used]

Remote control unit for servicing (GGF1381)

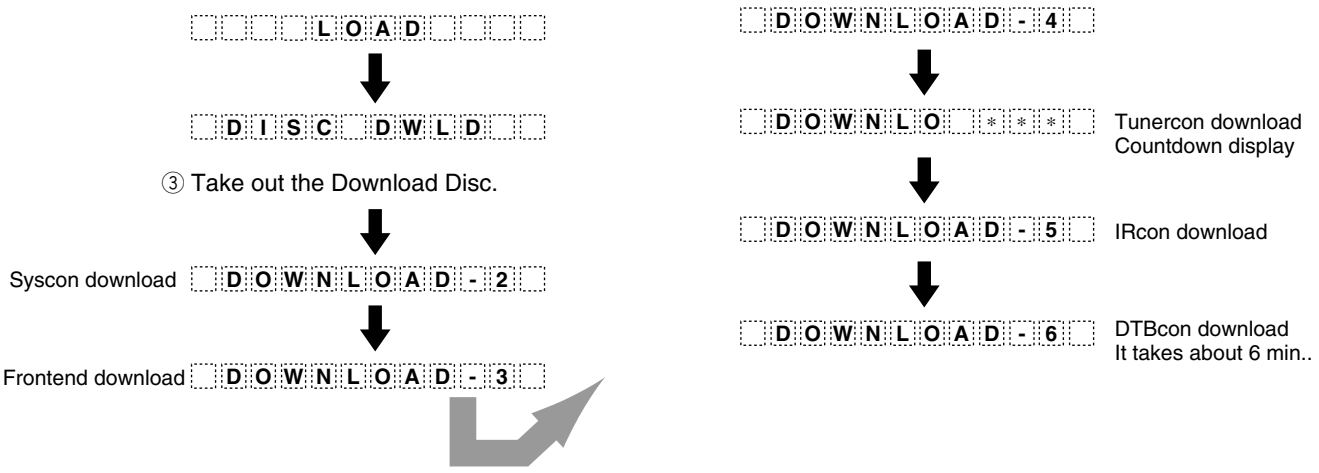
Download DISC

[Notes]

Be sure NOT to turn off the unit during downloading.
If the unit is turned off during downloading, the SYSCON, TUNERCON, DRIVE and IR Blaster programs may not be properly rewritten, in which case the unit may not be able to initialize itself normally when turned on again.

[Procedure] ① Open a disc tray by pressing the "OPEN/CLOSE" button.
② Put the download disc on the tray. Press a " A.TV/D.TV " button while pressing a "Stop" button on the frontpanel.
* The disc tray closes automatically and the disc is loaded.
* The disc tray opens automatically after loading.

FL display



* After download is completed, the power turns off, and turns on and a disc tray closes automatically.
* It takes for about 7-8 minutes until download is completed.

④ Press and hold a " ESC " button, then press " DISP " button on the remote control unit for servicing.
⑤ Confirm a firmware release version.
⑥ Press " ESC " button on the remote control unit for servicing in order to exit the test mode.

[Tips]

(1) If the power is not correctly turned on or when the power is shut off during downloading, proceed as follows before performing download again:

- In a case where downloading was incorrectly terminated while "DOWNLOAD-2" was displayed on the FL display:
  The SYSCON program will not function correctly.
  If the program cannot be downloaded from the disc or through serial communication, replace the MAIN ASSY.

- In a case where downloading was incorrectly terminated while "DOWNLOAD-3" was displayed on the FL display:
  The DRIVE program will not function correctly.
  If the program cannot be downloaded from the disc or through serial communication, replace the MAIN Assy.

- In a case where downloading was incorrectly terminated while "DOWNLOAD-4" was displayed on the FL display
  The program for the tuner microcomputer will not function correctly.
  If the program cannot be downloaded from the disc, replace the TUNERCON microcomputer (IC101 : JACB ASSY).

- In a case where downloading was incorrectly terminated while "DOWNLOAD-5" was displayed on the FL display
  The program for the IR Blaster microcomputer will not function correctly.
  If the program cannot be downloaded from the disc, replace the IR Blaster microcomputer (IC301 : JACB ASSY).

- In a case where downloading was incorrectly terminated while "DOWNLOAD-6" was displayed on the FL display
  The program for the IDTB microcomputer will not function correctly.
  If the program cannot be downloaded from the disc, replace the DTB microcomputer (IC106 : DTBR ASSY).

(2) The setting way to shipping mode (Reference)
At ② lines of the [Procedures], press "OPEN/CLOSE" button while pressing "STOP" button.

2. SERIAL DOWNLOAD

[Purposes]

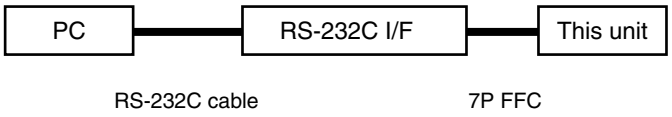
1. When the main board is replaced, the firmware versions for the system control computer, drive, and the TUFL microcomputer do not match, and operations of the unit may be destabilized. In such a case, the versions for the above three must be matched.
2. This method is used when disc downloading fails.

[Tools to be used]

* PC with serial port
* RS-232C straight cable
* RS-232C I/F jig (GGF1348)
* 7P FFC (VDA1681)
* Download program (UFU.exe)
* Firmware

[Connection]

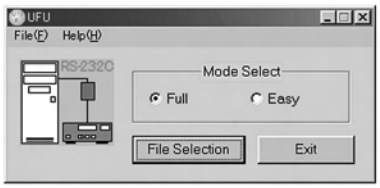
Connect as follows:



[Procedures]

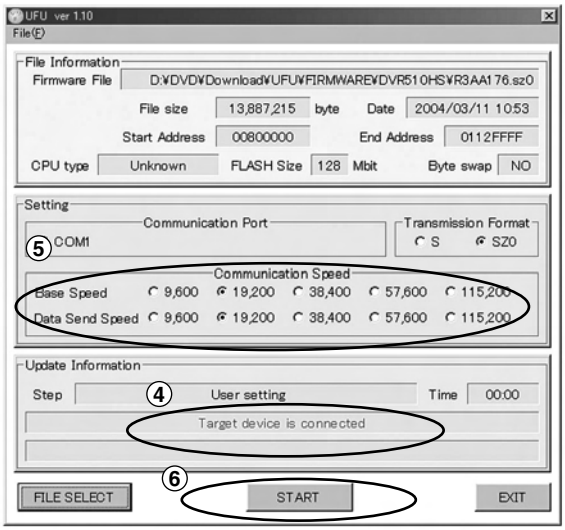
① Connect the 232C I/F jigs above way.

② Turn on the PC and start the " UFU.exe ".



③ Select the Firmware file. ("sz0" file)

④ Turn the DVD recorder on and start the download program.
" Target Device is connected " is appeared on the screen.



⑤ Select the Communication Speed (Baud Rate)
a) Base Speed 115,200
b) Data Send Speed 115,200

⑥ START
- Even if you click "START" button, sometimes "Communication Error" may come out one to twice, and download may fail.
  In this case, please click "START" again.
- Other factors can be considerd if download fails 3 times or more.
- And it takes about 20 minutes for updating the firmware.

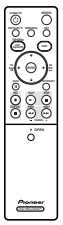
* TUNERCON, IR con and DTB con program is not downloaded this way, so do disc-download for TUNERCON, IR con and DTB con.

7.1.4 VIDEO ADJUSTMENT FOR SPECIFIC AREA

[Purposes]

Depending on the area, if a flicker may appear in a picture received by the tuner, it can be corrected or reduced with this setting.

[Tools to be used]



Remote control unit supplied with the unit (VXX3092)

Remote control unit for servicing (GGF1381)

1. Specific-Channel Setting mode

In this mode, specific settings can be made for up to 12 channels.
For channels that do not have specific settings, the settings of General Setting mode are applied.

[How to enter this mode]

① Select a channel or line input (L1-L3) on which a specific setting is to be made.
② Press the ESC then CHP/TIM keys on the remote control unit for servicing. "General Setting mode" is displayed.
③ Press the DIG/ANA key in General Setting mode. Specific-Channel Setting mode is entered.

[How to exit] Press the ESC key on the remote control unit for servicing to return the Normal mode.

[Note] Setting is in effect only during recording/playback stop.

[Setting examples]

The setting examples in Specific-Channel Setting mode are shown below.
For details on each setting item, see "Table 1: Key operations in Specific-Area Setting mode."

[When specific channel setting have NOT been made]

Specific Area Mode			
Input - [TUNER]			
General setting data	Sync AGC	: ON	*
	H Threshold Level	: 12	*
	V Threshold Level	: 10	*
	EPG EQ	: OFF	*
	RGB Line Mask	: 28	*
Individual setting state			
Input Channel - [	1CH]		
Specific channel setting data	Sync AGC	: ---	
	H Threshold Level	: ------	
	V Threshold Level	: ---	

[When specific channel setting have been made]

Specific Area Mode			
Input - [TUNER]			
	Sync AGC	: ON	*
	H Threshold Level	: 12	*
	V Threshold Level	: 10	*
	EPG EQ	: OFF	*
	RGB Link Mask	: 28	*
Individual setting state			
Input Channel - [	1CH]		
	Sync AGC	: ON	*
	H Threshold Level	: 14	
	V Threshold Level	: 7	

[Tips]

- If a channel that does not have specific settings is displayed, the setting figures are displayed as hyphens (- -).
- If the setting figures are not displayed as hyphens, those settings have been specifically set even if they are identical to the default settings or those of General Setting mode.
- The setting indicated with an asterisk (*) is the default.
- The channels to be indicated for "Input Channel" are as shown below:
  Line inputs: L1-L3, DV (DV is not valid for specific-area settings.)
  Tuner channels: Channels received by the tuner (channels to be set in Specific-Channel Setting mode, etc.)

[Tips]

- Indication when the maximum number (12) of channels have individual settings
  If a channel that does not have specific settings is currently selected, the indication will be as shown below, and individual data items cannot be set for that channel. To set individual data items for the currently selected channel, you must clear any specific-channel settings for one or more channels.

```
Specific Area Mode
  Input - [ TUNER ]
  Sync AGC          : ON          *
  H Threshold Level : 12          *
  V Threshold Level : 10          *

  EPG EQ            : OFF         *

  RGB Line Mask     : 28          *

Individual  setting  state
  Sorry !
  You can store only 12 channels
  for Specific Area mode.
```

[H Threshold Level]
The slice level setting for the horizontal(H)-sync separation circuit can be changed. By your changing the slice level, horizontal sync disturbance may be ameliorated. Set the slice level to a value with which the least sync disturbance is seen.

[V Threshold Level]
The slice level setting for the vertical(V)-sync separation circuit can be changed. By your changing the slice level, vertical sync disturbance may be ameliorated. Set the slice level to a value with which the least sync disturbance is seen.

[Receiver sensitivity setting for an electronic program guide (EPG)]
The sensitivity when receiving an electronic program guide can be selected. Set the sensitivity to "High" only if reception is unstable.

2. General Setting mode

[How to enter this mode]

- To shift from Specific-Channel Setting mode:
  Each time the DIG/ANA key is pressed, Specific-Channel Setting mode and General Setting mode are alternately selected.

- To shift from Normal mode (recording/playback stop):
  Press the ESC then CHP/TIM keys.

[How to exit] Press the ESC key to return the normal mode.

[Setting examples]

Show setting example on the General Setting mode screen to the following.
Regarding setting of actual each item, refer to table 1 (key operations in specific-area setting mode).

[General Setting mode screen]

```
Specific Area Mode
  Input - [ TUNER ]
  Sync AGC          : ON          *
  H ThresholdLevel  : 12          *
  V Threshold Level : 10          *

  EPG EQ            : OFF         *

  RGB Line Mask     : 28          *
```

*: Setting is the default.

[Display in General Setting mode when the channel currently displayed has specific settings]

```
Specific Area Mode
  Input - [ TUNER ]
  Sync AGC          : ON          *
  H ThresholdLevel  : 12          *
  V Threshold Level : 10          *

  EPG EQ            : OFF         *

  RGB Line Mask     : 28          *

This channel is set up
  individually.
```

[Tips]

- General Setting mode can be entered only during recording/playback stop.
- The currently selected input mode (TUNER or LINE) is displayed for "Input."
- If L1, L2, L3, or DV is selected for input, general settings for the line input can be made (DV is not valid for specific-area settings), and if TUNER is selected, general settings for the tuner input can be made.

Table 1: key operations in specific-Area setting mode (1/2)
Key operations in Specific Area Setting mode of the remote control units are shown in the table below
(the keys are of the remote control unit for servicing unless otherwise stated):

Key	Operation	Switching (*: Default)	Remarks	Used in Specific-Channel Setting mode	Used in General Setting mode
[DIG/ANA]	Switches General setting mode and Specific setting mode.	–	–	○	○
[INPUT SELECT], [CHANNEL +/-] (Remote control unit supplied with this unit)	Switches inputs or channels.	–	–	○	○
[SIDE A], [SIDE B]	Sets SyncAGC.	ON(*) / OFF	ON : The sync level is set to an appropriate value. OFF : Cancel the Sync AGC.	○	○
[Rev ×3], [×3 Fwd]	Sets H Threshold.	0 – 15 (Default : 12)	[Rev ×3] : Decreasing 1 by 1 in the range 0 to 15. (Cyclic operation) [×3 Fwd] : Increasing 1 by 1 in the range 0 to 15. (Cyclic operation)	○	○
[Rev CHAPTER SKIP] [CHAPTER SKIP Fwd]	Sets V Threshold Level.	0 – 15 (Default : 10)	[Rev CHAPTER SKIP] : Decreasing 1 by 1 in the range 0 to 15. (Cyclic operation) [CHAPTER SKIP Fwd] : Increasing 1 by 1 in the range 0 to 15. (Cyclic operation)	○	○

Table 1: key operations in specific-Area setting mode (2/2)

Key	Operation	Switching (*: Default)	Remarks	Used in Specific-Channel Setting mode	Used in General Setting mode
[<<|| STILL STEP], [STILL STEP ||>>]	Sets Line Mask setting at RGB signal is inputted.	22 - 40 (Default: 28)	[<<|| STILL STEP] : Decreasing 1 by 1 in the range 22 to 40. (Cyclic operation) [STILL STEP ||>>] : Increasing 1 by 1 in the range 22 to 40. (Cyclic operation)	×	○
[PLAY]	All channels that have specific setting data will be canceled, and the specific data will be initialized.	–	The General Setting data will not be changed.	○	×
[CLEAR]	Specific-Channel Setting mode: If the currently selected channel has its specific setting, that setting will be canceled. (By canceling the specific setting for that channel, the number of remaining channels that can have specific settings will be increased by one.) General Setting mode: Settings of General Setting mode are initialized.	–	Specific-Channel Setting mode: All specific data are initialized. The General Setting data will not be changed. General Setting mode: All general setting data are reset to default. The specific setting data will not be changed (will be retained).	○	○
[PAUSE]	The specific-channel-setting data for the currently selected channel are reset to default.	–	The General Setting data will not be changed (will be retained).	○	×
[ESC]	To quit Setting mode for a specific area and clear the on-screen display.	–	–	○	○

Notes:
- Each key listed in Table 1 above is active only while the tuner is completely stopped.
- The setting values will not be reset to default even if resetting to the state at the time of shipment is performed.

7.1.5 SERVICE MODE

Overview and purposes

To be used to check the status of the product and to collect the information for failure diagnosis.
The following information to be used for servicing is displayed:
[1] First screen : Version, HDD information, etc.
[2] Second screen : ATA/ATAPI debug screen (Writer information)
[4] Fourth screen : VR-recording-related error logs

Each screen has sublevel screens.

[Note] After entering any Service mode screen, to shift to another Service mode screen, first quit that Service mode screen then enter another Service mode screen.

1. Version information, etc. (First screen)

[Purposes]

To check the versions of the system control computer, TUNER microcomputer, and firmware for the drive, simple measurement of the RF level for the U/V tuner, results of the simple error rate measuremen, HDD information, and OSD Filter setting

[Tools to be used]

Remote control unit for servicing (GGF1381)

Aluminum-coated test disc (GGV1025)

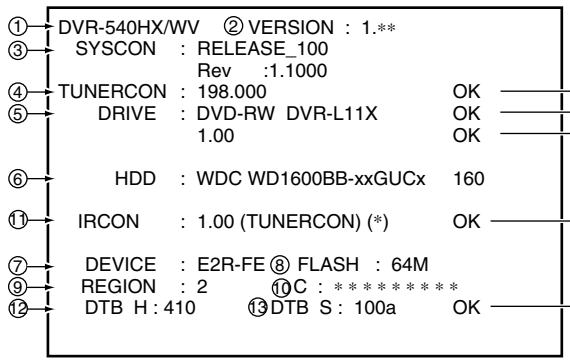
[How to enter] While the GUI screen is not displayed, press the ESC then DISP keys.

How to enter and change subscreens of the first screen: While the first screen is displayed, press the DIG/ANA key repeatedly until your desired subscreen is displayed. The subscreens change

[How to quit] Press the ESC key.

[Description]

(1) First screen


① DVR-540HX/WV ② VERSION : 1.**
③ SYSCON : RELEASE_100
Rev :1.1000
④ TUNERCON : 198.000 OK
⑤ DRIVE : DVD-RW DVR-L11X OK
1.00 OK
⑥ HDD : WDC WD1600BB-xxGUCx 160
⑪ IRCON : 1.00 (TUNERCON) (*) OK
⑦ DEVICE : E2R-FE ⑧ FLASH : 64M
⑨ REGION : 2 ⑩ C : * * * * * * * * * *
⑫ DTB H : 410 ⑬ DTB S : 100a OK

OK : Appropriate version compared with that of the firmware of the system control computer
NG- : The version of the TUNER microcomputer is older.
Measures to be taken:
• Download the firmware.

OK : The appropriate drive is mounted.
NG : An inappropriate drive is mounted.
Measures to be taken: Download the firmware.

OK : Appropriate version compared with that of the firmware of the system control computer
NG- : The version of the drive microcomputer is older.
Measures to be taken: Download the firmware.

OK : Appropriate version of the IRCON (when operated by IR u-com)
NG+ : The version of the drive IR blaster computer is advanced.
Measures to be taken: Download the firmware.
NG- : The version of the IR blaster microcomputer is older.
Measures to be taken: Download the firmware.

OK : Appropriate version of the TUNERCON
(when operated by TUFL u-com)

OK : Appropriate version of the DTBCON
NG+ : The version of the drive DTB microcomputer is advanced.
Measures to be taken: Download the firmware.
NG- : The version of the DTB microcomputer is older.
Measures to be taken: Download the firmware.

① Model name/destination
② Version of the recorder software
③ Revision No. of the system-control computer software
④ Version No. of the tuner microcomputer
Result of the combination ckeck with system u-com
⑤ Information on the built-in drive
(Model name, version No., model type)
⑥ Data of the built-in HDD, capacity of the HDD
⑦ DEVICE information (EMMA type, ES No.)
⑧ FLASH ROM information
⑨ Region No.
⑩ CPRM information (CPRM key No.)
⑪ IR Blaster u-com information
(Version when operated by IR Blaster u-com)
(*)(TUNERCON when operated by TUFL Con)
⑫ DTB hardware information (Version)
06EU : 410
⑬ DTB u-com information (Version)

• Details on HDD data are described below:

HDD : WDC10234564 # 160

- Capacity of the HDD (unit: Gbytes)
- HDD identification error indication
- Name of manufacturer, part No. by manufacturer

If any abnormality exists in HDD connection, the indications shown in Table 1 below are displayed.

Table 1: HDD recognition status represented by the HDD data display

HDD identification conditions	Example of HDD data to be displayed	Remarks
Failure in physical identification of HDD (no connection, defective HDD, interface error)	Blank space	• Check the connection to the ATA connector. • Replace the ATA flexible cable and connector. • Replace the HDD. • Replace the resistor in the ATA communication line.
Physical identification of HDD possible, but not identified (CPRM ID is not input.)	WDC 10234564 # 160	• Input the CPRM ID.
Physical identification of HDD possible, HDD identified, but failure in logical formatting	WDC 10234564 ! 160	"!" represents an HDD-recognition error. • Initialize the HDD or erase all titles.
Physical identification of HDD possible, HDD identified, and correct logical formatting (HDD correctly identified)	WDC 10234564 160	

If an error indication in the HDD data does not disappear even after the above measures were taken, refer to another sheet of "HDD Service Mode."

(2) Simple diagnosis of the RF level (Subscreen 1)

[Purposes] To check the RF signal of the U/V tuner by checking the input frequency difference and AGC voltage in this debug mode

[How to enter] While the User Setting display is displayed, press the ESC, DISP, then DIG/ANA keys, in that order.

[How to quit] Press the ESC key.

[Description]

```
DVR-540HX/WV      VERSION : 1.**
  SYSCON   : RELEASE_***
             Rev    :1.******
TUNERCON   : 198.000                OK
   DRIVE   : DVD-RW DVR-L11X        OK
             1.00                   OK

     HDD   : WDC WD1600BB-xxGUCx    160

  DEVICE   : E2R-FE    FLASH : 64M
  REGION   : 2         C : *********
  DTB  H : 410         DTB  S :100a    OK

  Input CH : ** ch
  Freq Diff : Low 1
  AGC Volt : **** mV
```

- Input channel
- Input frequency difference
- AGC voltage

Subscreen 1

1) Frequency Difference (Freg Diff)

How much tuning is off is monitored, as shown below:

Input Frequency	Display
Faraway	High 7
High (within 200kHz)	High 1~5
Just Tune	Center
Low (within 200kHz)	Low 1~5
Low (over 200kHz)	Low 7

2) AGC voltage (AGC Volt)

The gain controlled by the tuner is monitored to infer the input electric field intensity.
(The accuracy of inference differs depending on the product.)

	Field Intensity	AGC VOL
Intense field area (Clear image)	70 dBµ or more	3100 mV or less
Less intense field area (Noise may be generated.)	50 dBµ or more 70 dBµ or less	3100 - 4400mV
Weak field area (Much noise. EPG/VPS/PDC sometimes cannot be obtained.)	30 dBµ or more 50 dBµ or less	4400 mV or more (It is unable to discriminate under the weak field area.)
Very weak field area (Image damaged. EPG/VPS/PDC cannot be obtained.)	30 dBµ or less	4400 mV or more (It is unable to discriminate.)

Tips:

For good reception, the field intensity must be 50 dBµ or more (AGC Volt 4400 mV or less).
For accurate measurement, use a field intensity meter.

(3) Simple Error Rate Measurement (Subscreen 2)

[How to enter]
- While the User Operation screen is displayed, press the [ESC] then [DISP] keys, then the [DIG/ANA] key twice, in that order.
- While subscreen 1 of the first screen is displayed, press the [DIG/ANA] key.

[How to quit] Press the [ESC] key.

[Measurement procedures]

① Display subscreen 2.
② Load the Test disc (GGV1025).
③ Judge the results of the error rate measurement by referring to Table 1 on page 89.

ERR RATE : *.*e-*

Subscreen 2

[Tips]

During VR mode playback, the average value of the past 10 VOBUs is displayed. During DVD-Video or Video mode playback, the average value of the past 256 sectors is displayed.
During VR mode playback, the speed ratio of the drive (/: normal, no indication: double speed) is also displayed.

Table 1: Thresholds when determining OK or Error

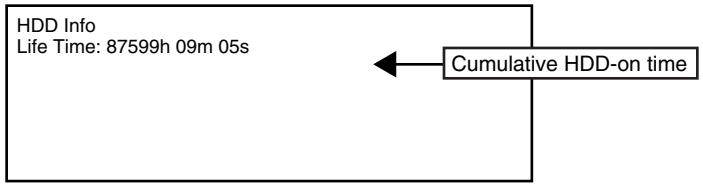
Disc type	Recording mode	Finalized or not finalized	Reference value
DVD-VIDEO	–	–	8.0×10^{-4}
DVD-R	Video mode	Finalized	1.0×10^{-3}
		Not finalized	1.0×10^{-3}
DVD-RW	Video mode	Finalized	1.0×10^{-3}
		Not finalized	1.0×10^{-3}

(4) HDD information (Subscreen 3)

[How to enter]
- While the User Operation screen is displayed, press the ESC then DISP keys, then the DIG/ANA key three times, in that order.
- While subscreen 2 of the first screen is displayed, press the DIG/ANA key.

[How to quit] Press the ESC key.

[Mode description]



Subscreen 3

[Tips]

- **How the data on cumulative HDD-on time are processed in memory**

  Storage place:
  FLASH ROM

  Timing of referring to the data on cumulative HDD-on time:
  When the power is turned on, fails, the FLASH ROM is referred to.

  Timing of updating the data on cumulative HDD-on time:
  While the HDD is on, the data on cumulative HDD-on time in the RAM is updated every 3 seconds, and every time updating is executed the data are stored in the Backup SRAM. When the power is turned off, the data are stored in the FLASH ROM.

- **How to clear the data on cumulative HDD-on time**

  FLASH ROM:
  When the HDD Identification Setting is performed, the data on cumulative HDD-on time are automatically cleared. The HDD Identification Setting is automatically performed when the CPRM setting is performed on the CPRM setting screen (to display the CPRM setting screen, press the ESC then the STEREO keys).

  Notes:
  - The data on cumulative HDD-on time are not cleared when resetting to factory-preset values is performed.
  - The data on cumulative HDD-on time are not cleared when the system-control computer software is downloaded.

(5) OSD FILTER SETTING (SUB screen 4)

[Purpose] Depending on the monitor used, the character flicker on the OSD may stand out.
If a system, such as charavter flicker, appears on the monitor, select the filter response.

[Tools to be used]

Remote control unit for servicing
(GGF1381)

[How to enter]
- While the User Operation screen is displayed, press the ESC then DISP keys, then the DIG/ANA key four times, in that order.
- While subscreen 3 of the first screen is displayed, press the DIG/ANA key.

[How to quit] Press the ESC key.

[Setting procedures]

① Display subscreen 4.
② Select the setting from the key operation table.

OSD Filter Setting

OSD FILTER : 4

Subscreen 4

[Tips]

As the setting value becomes greater, jitter is reduced on a CRT display. However, as lines for characters appear thick, complex characters may become difficult to read. On the contrary, as the setting value becomes smaller, jitter increases on a CRT display. However, as lines for characters become sharper, complex characters become more legible.

Note: Use the remote control unit for servicing.
Note: A new setting becomes active as soon as it is made. As a new setting is stored in nonvolatile memory, it will be retrieved when the unit it turned on the next time.
Note: After the factory-preset values are downloaded, the setting value for the OSD Filter will be the default value (4).

[(Table 2) Key operation of OSD Filter setting]

Key	Operation	Setting value	Remarks
[Rev x 3], [SPEED+] [x 3 Fwd], [SPEED-]	Changing the setting value for the OSD Filter	0 - 4 (Default value: 4)	[Rev x 3], [SPEED+] : The setting value increases by 1. [x 3 Fwd], [SPEED-] : The setting value decreases by 1.
[CLEAR]	The setting value is reset to default.	–	
[ESC]	To exit the OSD Filter Setting and clear the screen (Appears the tuner screen.)	–	–

2. ATA/ATAPI Debug Screen (Second screen)

[Purposes]

To be used as a rough guide to judge whether the pickup unit is all right or not

- Dirt on the pickup lens
- Degradation of the laser diodes for reading CDs and reading/writing to/from DVDs

[Tools to be used]

Remote control unit for servicing (GGF1381)

Aluminum-coated test disc (GGV1025)

[How to enter]

- While the User Operation display is displayed, press the ESC, DISP, then 2 keys, in that order.
- While any subscreen of the second screen is displayed, press the DIG/ANA key repeatedly. The subscreens change cyclically.

[How to quit] Press the ESC key.

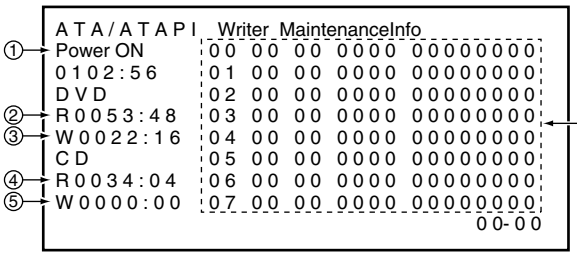
(1) Writer maintenance information of ATA/ATAPI DEBUG OSD (Subscreen 3)

[How to enter]

- While the User Operation screen is displayed, press the ESC, DISP then 2 keys, then the DIG/ANA key twice, in that order.

[How to quit] Press the ESC key.

[Procedures] Update the display by pressing the SEARCH key while subscreen 3 is displayed.



Error log for the Writer (Not for Service)

① Power-on time/cumulative power-on time
② Duration of emission of the laser diode (LD) for DVD-R/DVD while reading
③ Duration of emission of the LD for DVD-W/DVD while writing
④ Duration of emission of the LD for CD-R/CD while reading
⑤ Duration of emission of the LD for CD-W/CD while writing (This function is not used for this model.)

② If the total hours of duration of emission of the laser diode (LD) for DVDs while reading ② and that of emission of the LD for DVDs while writing ③ exceed 4,700 hours, the LDs may be degraded. Perform an LD degradation judgment, using subscreen 4.

[Tips]

MTTF hours for each LD
DVD: 4,700 hours
CD: 11,000 hours
The ATA/ATAPI Writer Maintenance Info is obtained each time the power is turned on. Thereafter, the data on the subscreen is updated each time the SEARCH key is pressed (the updating command is sent) while this subscreen is displayed. Care must be taken when updating this subscreen, because an undesired command is inserted if it is executed while recording, etc.
[Note on lighting time data for each LD]
Since data on lighting time of each laser diode (LD) are stored in the flash ROM on the MAIN Assy, after the MAIN Assy is replaced, the data will be cleared. However, after the LOADER Assy is replaced, data on lighting time of each LD will be retained in the MAIN Assy. Therefore, before either the MAIN Assy or LOADER Assy is to be replaced, it is recommended that you write down the lighting time data.

(2) LD degration judgment of ATA/ATAPI DEBUG OSD (Subscreen 4)

[How to enter]
- While the User Operation screen is displayed, press the ESC, DISP then 2 keys, then the DIG/ANA key three times, in that order.

[How to quit] Press the ESC key.

[Notes]
- For correct measurement of items ① to ④ indicated in the display below, leave the unit at room temperature (25°C) for a while before turning it on, and do not load a disc.
- For RF measurement (item ⑤), it is recommended to use the Test disc (GGV1025).
  As the RF level differs depending on the characteristics of the pickup from product to product, it cannot be used for judging degradation of the LD. Use the RF level as a rough guide to know the difference between before and after lens cleaning.

[Procedures] To update the value for each item, press the SEARCH key while subscreen 4 is displayed.
For details on each item and the conditions of updating the values, see Table 2 below.

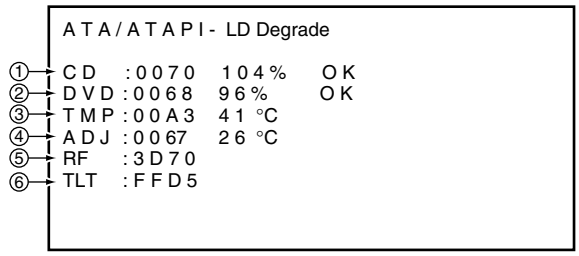


Table 2: Description of each item and conditions for updating data

No.	Item	Description	Conditions for updating by pressing the SEARCH key
①	CD	Degradation judgment of LD for CD. Regarded as NG when the value is 120% or higher (same standard as for the PC drive)	No disc inserted in the disc tray
②	DVD	Degradation judgment of LD for DVD. Regarded as NG when the value is 120% or higher (same standard as for the PC drive)	No disc inserted in the disc tray
③	TMP	Current temperature inside the Writer	No disc inserted in the disc tray
④	ADJ	Temperature (approx. 25°C) inside the Writer during adjustment	No disc inserted in the disc tray
⑤	RF	RF level (16-bit data, proportional calculation performed using the actual RF level value with 2.5 V = 0xFFFF as the maximum value, displayed in 4-digit hexadecimal)	During playback of disc medium (GGV1025)
⑥	TLT	Writer adjustment data for straight (non-HDD) model (FFFF is diplayed when the writer is not adjusted.)	No condition

If the results of degradation of the LDs for CDs and DVDs are both NG, replace the drive.

3. VR-Recording-Related Error Logs (Fourth screen)

[Purposes]

To roughly determine in which category shown below a symptom that is difficult to reproduce belongs.
For details on the categories of error logs displayed, see "Table 1: Description of VR-recording-related errors."

- Errors related to the MPEG Encoder
- Errors related to the drive system
- Errors related to copying
- Errors related to others
- Errors related to the HDD

[Tool to be used]

Remote control unit for servicing
(GGF1381)

[How to enter]

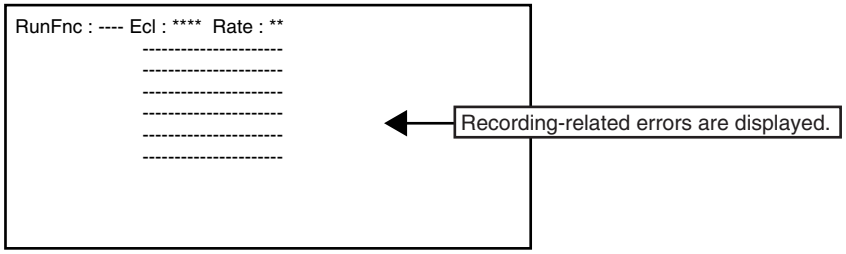
- While the User Operation display is displayed, press the [ESC], [DISP], then [4] keys, in that order.
- While any subscreen of the fourth screen is displayed, press the [DIG/ANA] key repeatedly.
  The subscreens change cyclically.

[How to quit] Press the [ESC] key.

[Description of each subscreen]

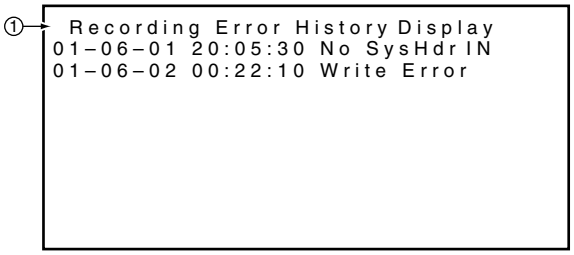
(1) VR-Recording-Related Error Logs (Subscreen 1)

- Errors related to recording are displayed on the lines "Rec Err:," as shown below.
  For details on errors, see "Table 1: Description of VR-recording-related errors."



(2) Subscreen 2 and 3 (These subscreens are not for service use.)

(3) VR-Recording-Related Error Logs (Subscreen 4)



① There are two error-log screens, on which up to 9 logs per screen are displayed.
(generation time [year-month-day, hour:minute:second], error data in simplified description)

[Tips]

- The two error-log screens can be switched by pressing the [SPEED+] or [SPEED-] key.
- For details on error messages, see Table 1 "Description of VR-recording-related errors".

(4) Subscreen 5 to 11 (These subscreens are not for service use.)

Table 1: Description of VR-recording-related errors

Any error message marked with * is displayed "RecErr : ---------" on the Subscreen 1 of the fourth screen.

● Error related to MPEG Encoder

Error Message	Description
AVEnc Hang	AVEncoder failed
IN Encode *	Changes cannot be made in the process of encoding
No SysHdr IN	System packet is not input periodically
Stm Start NG	Failure to start encoding (reasons not clear)
Stream NG	Inappropriate input stream data
Strm Start NG	Timeout waiting for system packet input at the beginning

● Error related to Drive system

In a case of an error in the drive system, scratches or dirt on a disc, or a problem of the drive itself (dirty pickup) may be suspected.

Error Message	Description
Bdr Cls NG	Close Border failed
Bdr Opn NG	Open Border failed
BUF Overflow	Overflow of the Stream Buffer
CLS Rzon Fail	Video Mode Close Rzone failure
Drive Hang	The Drive is hung up.
Drv Err	General error of the drive
Drv Hard Err	Abnormality in the drive hardware or firmware
Drv TimeOut	Timeout waiting for drive operation
Fail Repair	Repair failed
Format NG	Format failed
May Be V mode	Although TMP_VMGI is not written, it may be Video Mode disc.
Mech No Res	No response from the mechanical-control computer
MKB Invalid	MKB reading error
NWA Exhaust	NWA surpassed and impossible to use
OPC NG	OPC failed
PCA Full	PCA has been used up.
Read Err	Reading failed, ECC failed, etc.
ReadOnly DISC *	Because some data are invalid, data cannot be written
RMA Full	RMA has been used up.
Rzn Cls NG	Close RZone failed
Rzn Rpr NG	Repair RZone failed
Rzn Rsv NG	Reserve RZone failed
TMP-VMG WrErr	Video Mode TMP VMGI Write Error
VTSI_B Wr Err	Video Mode VTSI BUP Write Error
VTSI_B2 Wr Err	Video Mode VTSI BUP Write Error (After Layer Change)
VTSI Wr Err	Video Mode VTSI Write Error
VTSI2 Wr Err	Video Mode VTSI Write Error (After Layer Change)
Write Err	The Drive failed to write and could not be recovered.
May Be PVR	May be +VR disc, but no RSAT
V Final fail	Abnormal process occurred when finalizing Video mode
DLVR trace NG	Close Rzone failed at dual layer disc

RSAT : Reserved Space Allocation Table

● Error related to Dubbing

Error Message	Description
H2D CP SomeNG	Other NG HDD →DVD copy
Mem get NG	Video Mode Copy Memory has not ensured.
Strm TransfNG	Video Mode Copy Stream Transfer NG
Tracon Trn NG	Video Mode Copy Tracon tranfer has not been completed.
VC Cell Max	Maximum number for Video Mode copy Cells exceeded
VC CopyCancel	Video Mode Copy Copy Cancel
VC FlushC NG	Video Mode Copy Flush Cache NG
VC HDD C Err	Obtaining Video Mode Copy HDD Cell information failed
VC HDD Inf NG	No information on Video Mode Copy HDD
VC HDD Info NG	Format failed
VC Idling NG	Video Mode Copy idling NG
VC Pck Anl NG	Analizing Video Mode Copy Pack failed

● Error related to Dubbing (continued)

Error Message	Description
VC Transf Stp	Video Mode Copy Transfer Stop
VC TSO BLK NG	Video Mode Copy TSO Block transfer has not been completed.
VC VOBU SizeE	Video Mode Copy VOBU Size NG
V Rsv RzoneNG	Video Mode Copy Reserve Rzone failed
V2H APP FL NG	VR → HDD APP FLG is OFF
V2H Aud Ch NG	VR →HDD Audio Channel NG
V2H Aud Md NG	VR →HDD Audio Mode NG
V2H Aud Stm N	VR →HDD Audio Stream number NG
V2H SRC Prot	VR →HDD copy prohibitted material
V2H Unknown	VR →HDD other NG
V2H VOBU TMNG	VR →HDD Play back time of each VOBU is different
V2H V Reso NG	VR →HDD Video resolution NG
H2D CP NoSpac	HDD →DVD insufficient free space for copy
H2D TO HDDRD	HDD →DVD (VR) TimeOut at HDD playing side
H2D TO SPRO	HDD →DVD (VR) TimeOut at internal processing
H2D TO DVDWR	HDD →DVD (VR) TimeOut at HDD recording side

● Other Errors

Error Message	Description
Abort *	Cancellation
Already open	Extension file is already opened.
BK BATT Down	Backup RAM data has been erased.
BK FSYS Dirty	Backup RAM data has not been wrtten on the File Sys.
BUG	Some bugs
BusReset Done	Bus Reset has been excecuted.
Cell Close NG	Cell Close NG
CPRM IC NG	Inappropriate CPRM IC
Dir Depth Err	Tree of Directory is too deep.
Disc Full	No further data can be written because the disc is full.
DRAM CLR Err	Video Mode DRAM (Stream Buffer) Clear failure
DRAM NG	Abnormality in access to the Work DRAM
Drive Destroy	The drive has crashed.
EncModul Hang	Encoder routine is hung up.
F Alrdy Exst	Extension file is already exist.
File cansel	Extension file is canseled.
FileNot Exist	Extension file is not exist.
Format Excec	Formatting has been executed.
Invalid Disc *	The disc cannot be recognized.
Invalid Param *	Invalid parameter
Invalid TMVMG	Invalid TMP_VMGI content
Invalid UDF *	Invalid UDF content
Invalid VMG *	Invalid VMG content
Invalid VTSI	VTSI information of +VR is unusual.
Irr Action *	Incorrect action
MKB REVOKED	Error in gaining data
Limit Over *	Standard maximum limit exceeded
No More Info *	No more space in the internal work-management area
No Permission *	No permission to write to the disc
No Video	No video input (not locked)
Now Busy *	In the process of the emergency processing
NV Pck DMA Er	Inappropriate NaviPack DMA
NV Pck MK Err	Error in creating NaviPack
Ourob Strm NG	Inappropriate stream data to the Ouroboros input
Over Heat	Abnormal temperatute
PARAM NO ACCP	Recording parameter is not matched.
Process Over	Process is overfull.
Protect Src *	Source to be recorded is copy-protected.
Rec Pause *	No operation permitted during recording pause
Relocation Do	VR-recording data was relocated

● Other Errors (continued)

Error Message	Description
Repair Excec	Repairing has been executed.
Something *	Undetermined error
SRAM NG	Abnormality in access to the backup work SRAM
Status NG *	Abnormality in change of statuses
SW PVR	Switch to +VR playback process
SW Vpb mode *	Switching to video playback routine is required.
SW Vrec mode *	Switching to video recording routine is required.
Unmatch Stamp *	Impossible to modify because of nonmatching time stamp
VBR-SRAM NG	Abnormality in VBR SRAM
V Categ ID NG	Inappropriate Category ID
V Cate Inf NG	Inappropriate Category information
V Ext MAX Ovr	Count Max exceeded
V ExtToo Big	The extension file is too large.
V Ext TY NG	Type NG
Virgin DISC	Virgin Disc
VOBU Info NG	Inappropriate VOBU information
WaterMark Det	Watermark detected
WM Cracked	WM Cracked
Param Short	Editting Error (Clear A-B)
Invalid VRMI	Information of +VR is NG. (VRMI)

● Error related to HDD

Error Message	Description
Do nothing	Do nothing for demand.
ESFSYS CORUPT	easyfsys error
ESFSYS INIT	easyfsys initializing
HDD Buff High	High-level process executed for the HDD Buffer
HDD DEF DONE	HDD deflag finished
HDD DEF ERR	HDD deflag error
HDD Destroy	HDD is not recognized on the bus.
HDD INFO BAD	Incorrect HDD Management Data
HDD Initialize	HDD initialized
HDD IRRG POFF	Abnormal power off
HDD MBR NG	Inconsistent MBR data
HDDReset Done	HDD Reset executed
HDD ROMSUM NG	Rom-code check sum NG
HDD SIG NG	Inconsistent HDD Management Data Magic
HDD SMART NG	Inappropriate HDD SMART
HDD Trans Err	DMA error in HDD copy transfer
HDD unauthor	Inconsistent HDD serial No.
HDD Zero WR	MBR was witten
Task No Activ	Task has not been activated.
TT Rec Over	Title recording time full
HDD WRONG TGT	Invalid HDD target No. is directed.
extHDD Ignore	External HDD is dismounted.
HDD PFile NG	Program file installed in HDD is NG.
HDD DEL TT	Delete the title by HDD recovery.
HDD DEL PL	Delete the dubbing list by HDD recovery.
HDD DEL OC TT	Delete the title moving on the way inside HDD

● No Error

Error Message	Description
Non Err *	Normal

Abbreviations:

ECC = 4 byte Code for Error Correction
UDF = Universal Disc Format
PCA = Power Calibration Area
OPC = Optical Power Control
NWA = Next Writable Address
VMG = Video Manager
RMA = Recording Management Area
MKB = Media Key Block
TMP_VMGI = Temporary Video Manager Information
Border = from Lead-in to Lead-out

7.1.6 EPG SERVICE MODE

[Purposes]

Reasons for the following malfunctions can be inferred by checking the conditions for obtaining the past EPG data:

① EPG data cannot be obtained.
② Some EPG data obtained are missing.

[Tool to be used]

Remote control unit for servicing
(GGF1381)

[How to enter] • Press the [ESC], [DISP], [7] keys, in that order.

[How to quit] Press the [ESC] key.

[Description of the mode]

1. Summary screen

```
    0         1         2         3         4
    01234567890123456789012345678901234567890123456789
00  (EPG EURO)
01  Next Data  Download Time : 14:00
02             Duration     : 01h30m
03  Gemster Data  Fail Count : 00
04
05
06
07  EPG Data Receive Err Summary
08  Date  Start  End  MD  CH  RcvPkt   TotalErr
09  03/31 13:00 13:30 DL  03  001853   000000
10  03/31 09:00 11:00 DL  03  001192   000000
11  03/31 08:00 08:05 HS  --  000645   000000
12  03/31 00:00 00:00           000000   000000
13  03/31 00:00 00:00           000000   000000
14  03/31 00:00 00:00           000000   000000
```

Lines 01-02	The next download starting time for the EPG data is displayed. Next Data Download Time: Starting time Duration: Duration required for acquiring the EPG data
Lines 03	The Gemster EPG data cannot be found. Number times of Host Scan and Schedule Download, DT models only
Lines 09-14	The 6 latest error logs when EPG data were received are displayed, with the latest one at the top.

Date	: Month/day when reception started
Start	: Time when reception started
End	: Time when reception ended
MD	: Method for acquiring the EPG data (HS: Host scanning process, DL: Downloading process of the EPG data)
CH	: Data-receiving channel
RcvPkt	: Total number of received packages. A number 999,999 or greater is displayed as "999999."
Total Err	: Total errors during reception. The sum of Hamming Err, Trans Err and InvLine Err numbers indicated on the Detail screen. A number 999,999 or greater is displayed as "999999."

[Tips] In a case where only "HS" is displayed in the MD column of the logs, the host channel has not been found. It is necessary to check the country and postal-code settings in the user settings.

2. Detail screen

[How to enter] Press the DIG/ANA key while the Summary screen is displayed. Up to 6 detail screens (1 to 6) are displayed, one each time the DIG/ANA key is pressed. Each detail screen 1 to 6 corresponds with the EPG reception error logs from the top on the Summary screen.

[How to quit] Press the ESC key.

[Description of the Detail screens]

```
    0         1         2         3         4
    01234567890123456789012345678901234567890123456789
00  (EPG EURO)
01  EPG Data Receive Err Details - 1
02
03  Date : 03/31
04  Start Time : 13:00   END Time   : 13:30
05  Host CH    : 03      P-ON Kind  : Download
06
07  Data Receive Part   Total Err  : 000000
08  Pkt Rcv Num  : 001853  Pkt Snd Num : 001853
09  Inv Line Err : 000000
10  Slice Cont : Auto    EQ : OFF    LV : --h
11
12  Temporary  Buffer  Information
13  Pool  Num   : 000000  Max  Store  : 000000
14  Discard Pkt  : 000000  Use  Num   : 000000
```

Line	Display item	Description	Remarks
Line 01	EPG Data Receive Err Details-X	The rightmost figure represents the number of the current detail screen. This number corresponds to the order of the EPG reception error log from the top.	
Lines 03-05, Reception conditions	Date Start Time END Time Host CH P-ON Kind	: Month/day when reception started : Time when reception started : Time when reception ended : Data-receiving channel : Methods for acquiring the EPG data (host scanning and downloading)	Only during initialization, host scanning is automatically executed to find the host broadcast.
Lines 07-10, details on errors during reception	Total Err	: Total numbers of errors during reception. The total number of Hamming Err, Trans Err and InvLine Err indicated on the Detail screen. A number 999,999 or greater is displayed as "999999."	Total Errors: If the total number of errors reaches two digits or greater, it is likely that EPG data acquisition failed. Display subscreen 1 of the first screen and check the electric field intensity from the AGC level.
	Pkt Rcv Num Pkt Snd Num	: Total number of received packages. A number 999,999 or greater is displayed as "999999." : Total number of packages that were sent to the application program among all the received packages. A number 999,999 or greater is displayed as "999999."	If the total number of received packages is 0, it is likely that the country and postal-code settings are wrong.
	InvLine Err	: Total number of errors that were generated by receiving data from invalid lines. A number 999,999 or greater is displayed as "999999."	
	Slice Cont	: Slice level control Auto-Tu Con, Manual - Syscon.	
	EQ	: Equalizer setting (ON, OFF)	
	LV	: Slice level (10~30 hex) (Only when the slice Cont is Manual.)	

Note: The data on lines 12-14 are for software development, not for service use.

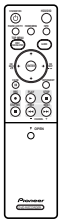
7.1.7 AGING MODE

[Purposes]

If symptoms regarding recording/playback of discs and/or the HDD that your customer claimed are difficult to reproduce, they can be reproduced with a long-time test in Aging mode.

[Tools to be used]

Remote control unit for servicing (GGF1381)



Remote control unit supplied with the unit (VXX3092)

Commercially available, recordable DVD-R/+R and DVD-RW/+RW/-RAM discs

[Notes]

- When aging for the DVD-RW/+RW/-RAM and HDD is executed, all recorded data on them will be erased.
- Commands from the remote control unit are accepted during Aging mode.
- If Aging mode is quit using the ESC key, indications on the FL display will return to normal display.
- Cancel timer settings before entering Aging mode.
- Set the recording rate beforehand. It cannot be changed during Aging mode.

[How to enter]

① Press the DVD key to switch to DVD.
② Load a recordable disc.
③ Select the input function of a recordable source.
④ After disc detection is performed, press the ESC then REP.B, and then PLAY keys on the remote control unit for servicing to enter Aging mode.

[How to quit]

Press the ESC key on the remote control unit for servicing to quit Aging mode and return to Normal mode.

Notes:

- If during recording: Recording is stopped.
- If during playback: Playback is paused.
- If during initialization: The unit stops after initialization is finished. (aging for ±RW/-RAM only)
- If the tray is being opened/closed: The unit stops after the tray is opened/closed.

[Description of operation] **Aging for the DVD-RW/DVD-R**

Aging for the DVD-RW/+RW/-RAM	Aging for the DVD-R/+R
During Aging mode, the following operations are repeated in the order shown below. ① The tray opens. ② The tray closes. ③ Initialization ④ Recording for 60 minutes ⑤ Playback for 45 minutes <DVD-RW> The initialization process in step 3 follows the setting specified in "Setting of the main unit--Recording--Auto initialization of a DVD-RW." <DVD+RW> The initialization process in step 3 is the same as that described in "Disc setting--Initialization--Initialization of a DVD+RW." <DVD-RAM> In the initialization process in step 3, physical formatting is performed, if required. During Aging, the number of loops is indicated on the FL display, as shown below. [AGING 0001] If an error is generated, the aging operation stops. **Note:** Indications on the FL display are retained, and this information is also retained as an OSD.	During Aging mode, the following operations are repeated in the order shown below. ① The tray opens. ② The tray closes. ③ Recording for 1 minute ④ Recording pause for 6 minutes ⑤ Recording stops. ⑥ Playback for 1 minute ⑦ Playback pause for 6 minutes ⑧ Playback stops. **Note:** A continuous test of the above operations is possible for approximately 23 hours. After ② the tray closes, disc detection is performed, <DVD-R> In step 2, if the disc is judged to have recorded up to 99 titles, the operation stops at that point. <DVD+R> If the disc is judged to have recorded up to 49 titles, the operation stops at that point. On the FL display, the number of loops is retained. On the OSD display, the error indication is retained. During Aging, the number of loops is indicated on the FL display, as shown below. [AGING 0001] If an error is generated, the aging operation stops. **Note:** Indications on the FL display are retained, and this information is also retained as an OSD. **Note:** Recording time depends on the recording rate set. For example, if the recording rate is MN32, only up to 60 titles can be registered. Check the setting for recording rate before performing aging.

[Aging for the HDD]

[How to enter]

① Press the HDD key to switch to HDD.
② Press the ESC key then the REP.B, and then the PLAY keys on the remote control unit for servicing to enter Aging mode.

[How to quit]

Press the ESC key on the remote control unit for servicing to quit Aging mode and return to Normal mode.

Notes:

- If during recording: Recording is stopped.
- If during playback: Playback is paused.
- If during erasure of all memory data from the HDD, the unit stops after all memory data have been erased.

[Description of operation]

During Aging mode, the following operations are repeated in the order shown below.
① Erasure of all the memory data from the HDD
② Recording for 60 minutes
③ Playback for 60 minutes

* *Take caution as all recorded data of the HDD is deleted.*

[Tips]

During Aging, the number of loops is indicated on the FL display, as shown below.
[AGING 0001]

If an error is generated, the aging operation stops.

Note:
Indications on the FL display are retained, and this information is also retained as an OSD.

7.1.8 HDD CHECK MODE

How to diagnose failure of the hard disc drive (HDD)

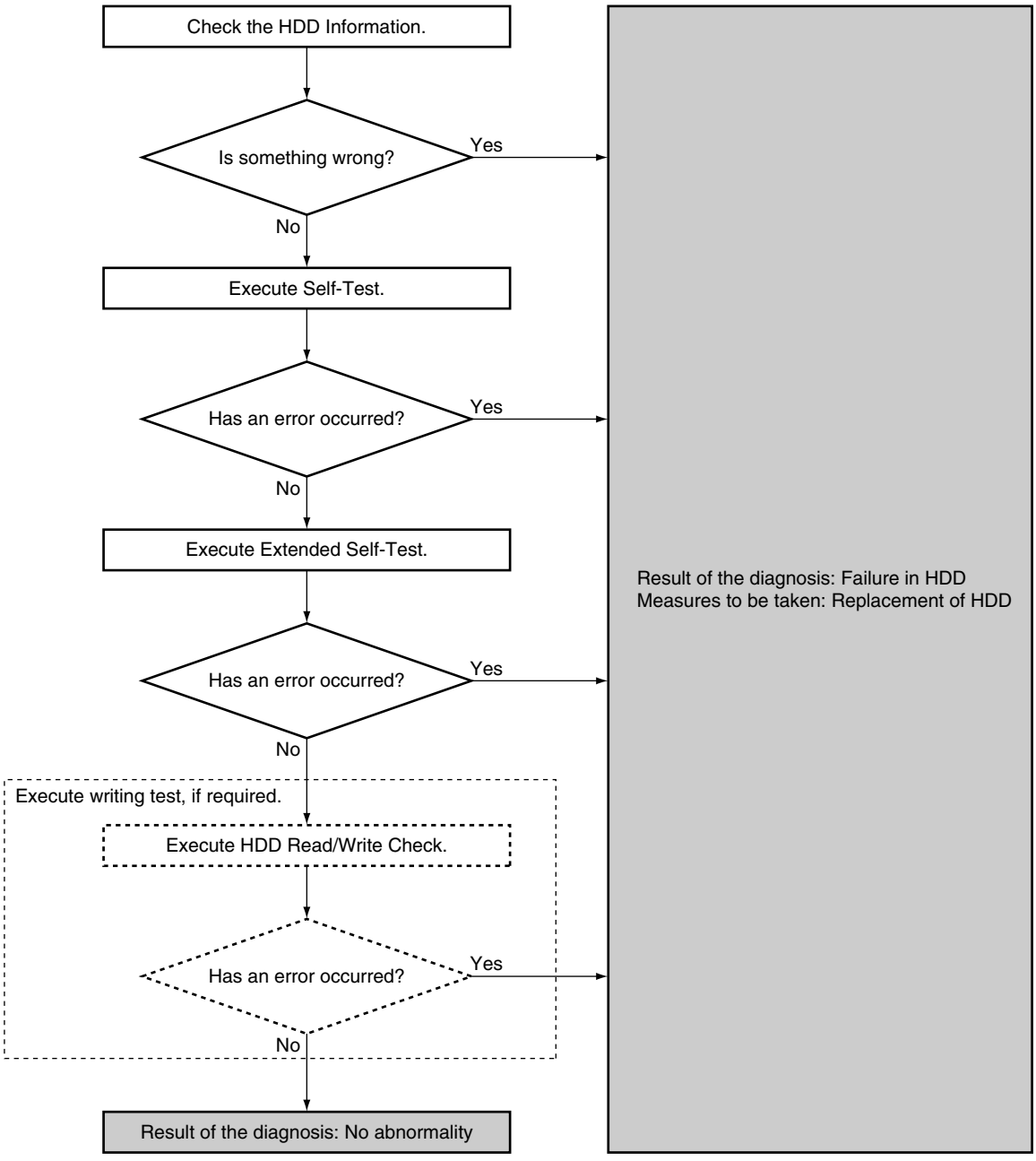
Purpose:
With use of the HDD-diagnostic program contained in the product itself, physical errors on the HDD can be diagnosed. Use this program to diagnose whether or not the HDD is in failure when one of the symptoms indicated below is recognized, or when a failure in the HDD is suspected.

Symptoms of failure in HDD:
(1) HDD Error
(2) Failure in HDD recording or playback
(3) HDD not recognized

Tool to be used:
Remote control unit for servicing (GGF1381)

1. Flow of HDD diagnosis

(1) Flowchart of HDD diagnosis



(2) Overview of the diagnosis items

HDD Information	This is a display for checking the HDD information, such as the model name of the HDD, continuous power-on time, authentication status, and results of the diagnosis on the end of service life.
SELF TEST	This is a simplified diagnosis for the HDD. A serious failure in the HDD can be detected with this test. Time required for testing: Approx. 60 sec.
EXTENDED SELF TEST	This is a reading test across all sectors of the HDD. Data recorded on the HDD will not be erased, because no writing operation is performed. Time required for testing: Approx. 2 hours/160 GB 1 hours/80 GB
HDD Read / Write Check	This is a writing, reading, and comparing test across all sectors of the HDD. **All data recorded on the HDD will be erased**, because all the data are to be overwritten. **Be sure to obtain your client's consent beforehand.** Time required for testing: Approx. 6.4 hours/160 GB 3.2 hours/80 GB

2. How to start or terminate the diagnostic program

How to start/terminate the diagnostic program

Use the remote control unit for servicing.

How to start: Press the "ESC", "CX", "0", and "1" keys simultaneously.

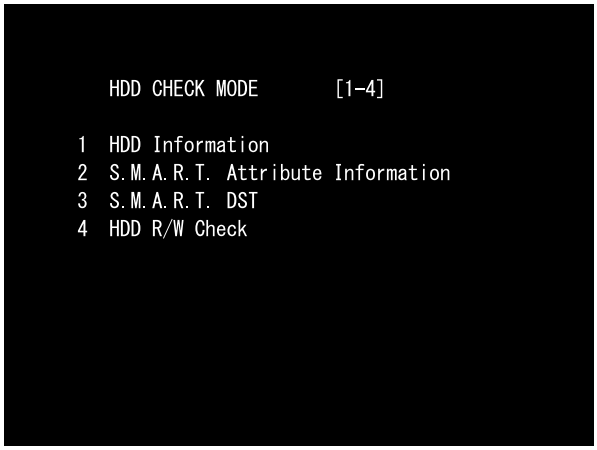
How to terminate: Press the "ESC" key.

Do NOT perform other operations on the unit while the HDD diagnosis is in progress. Although the diagnostic program is designed to function independently from the unit's functions, an operation on the unit during a diagnosis may cause a malfunction.

The status of the unit recommended during diagnosis is as follows: All stop, no timer recording (including auto-recording), and Input selection to L1-L3.

3. Diagnosis procedures

① Display the menu on the screen.
The menu indicated below is displayed when the diagnostic program is started. To enter each mode, press the corresponding key "1"-"4" on the remote control unit for servicing.



Tests to be executed
① HDD Information:
Check of the HDD information
② S.M.A.R.T. DST:
Executing a simplified test or a reading test of all data
③ HDD R/W Check:
Executing a writing/reading test of all data. All data on the HDD will be erased if this test is executed.

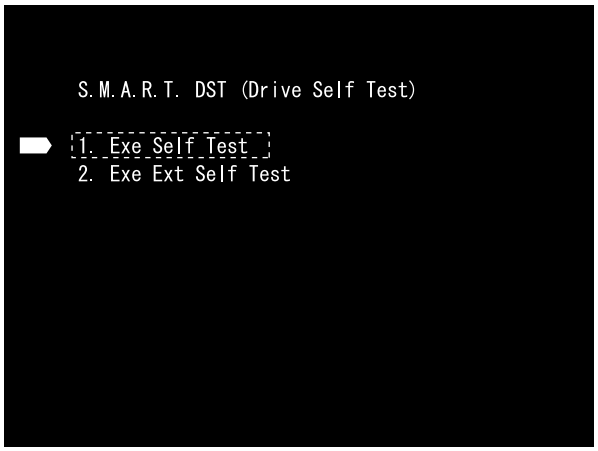
Note: "2. S.M.A.R.T. Attribute . . ." is not to be used.

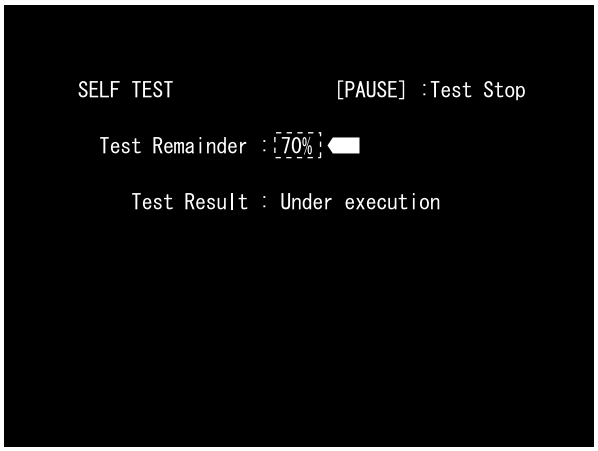
② Check the HDD information.
Press the "1" key on the remote control unit for servicing. Check the following data:
Model: Is the correct model name of the HDD displayed?
Recog. No: Is a positive value displayed?
SMART threshold: Is "not exceeded" displayed?

Detailed description
① Model:
For the correct model name, refer to the display of the unit.
② Recog. No:
Positive value: The HDD has been authenticated.
Negative value: The HDD has not been authenticated.
③ SMART threshold:
exceeded: The HDD has come to the end or near the end of its service life.
not exceeded: The HDD has not reached the end of its service life.

To return to the menu screen, press the "Clear" key.

③ Execute Self-Test.
Press the "3" key on the remote control unit for servicing while the menu screen is displayed.
When the following screen is displayed, press the "1" key to start the Self-Test.



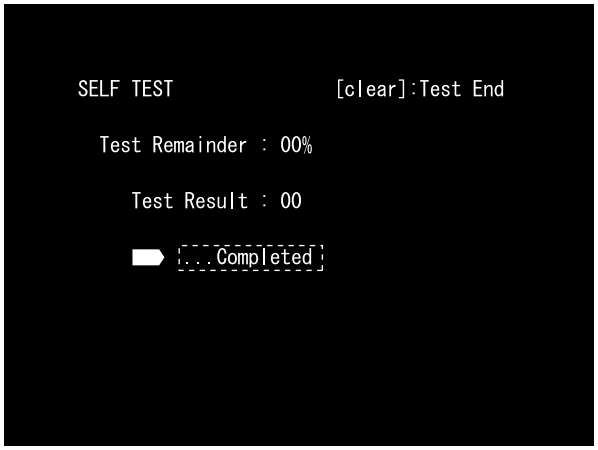


The progress of the test is displayed on the screen. The percentage remaining of the test is displayed on the screen, and the test is terminated when the percentage reaches 00%.
Check whether or not an error has occurred after the test is finished.

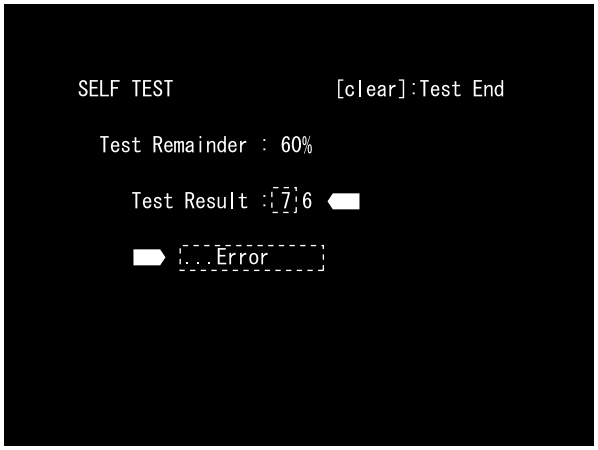
Diagnosis results
- Without an error: ". . . Completed" is displayed.
  Then, proceed to the Extended Self-Test.
- With an error: ". . . Error" is displayed. Look at the number in Test Result.
  If the place value for tens is 1 or 2, execute the Self-Test again.
  If it is from 3 to 7, the HDD must be replaced.

Note: If the result of the second test is the same, replacement of the HDD is required.

Example: No error

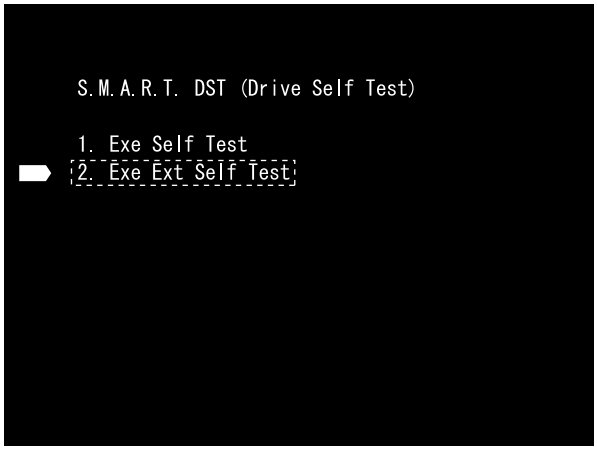


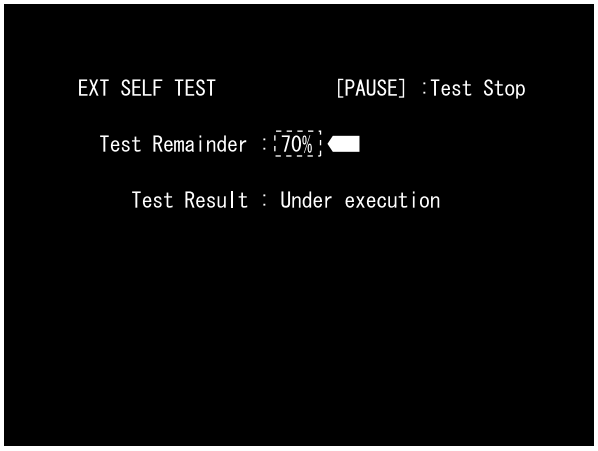
Example: With an error



To return to the menu screen, press the "Clear" key.

④ Execute the Ext (Extended) Self-Test.



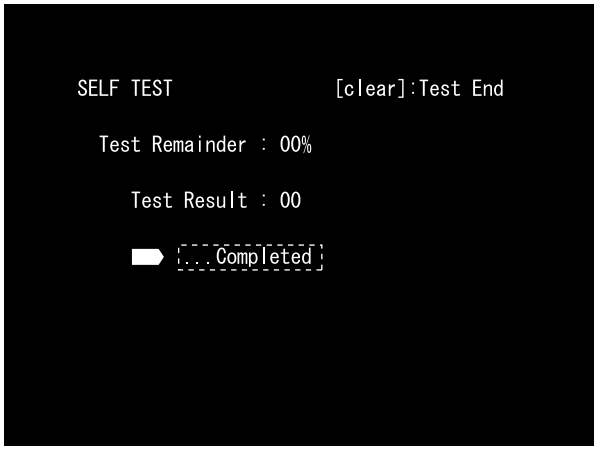


Press the "3" key while the menu screen is displayed, then the "2" key on the remote control unit for servicing. The Extended Self-Test starts. The percentage remaining of the test is displayed on the screen, and the test is terminated when the percentage reaches 00%. Check whether or not an error has occurred after the test is finished.

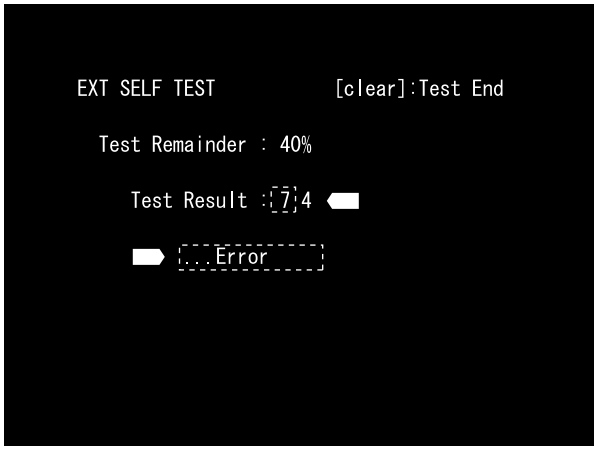
Diagnosis results
- Without an error: ". . . Completed" is displayed.
  If no error occurs up until this stage, HDD operations are normal except for writing operations.
  If the unit has a failure in HDD playback, a block other than the HDD may be in failure.
  If the unit's failure is in HDD recording, however, the next HDD Read/Write Check must be executed to test writing operations.
- With an error: ". . . Error" is displayed.
  Look at the number in Test Result.
  If the place value for tens is 1 or 2, execute the Ext Self-Test again.
  If it is from 3 to 7, the HDD must be replaced.

Note: If the result of the second test is the same, replacement of the HDD is required.

Example: No error

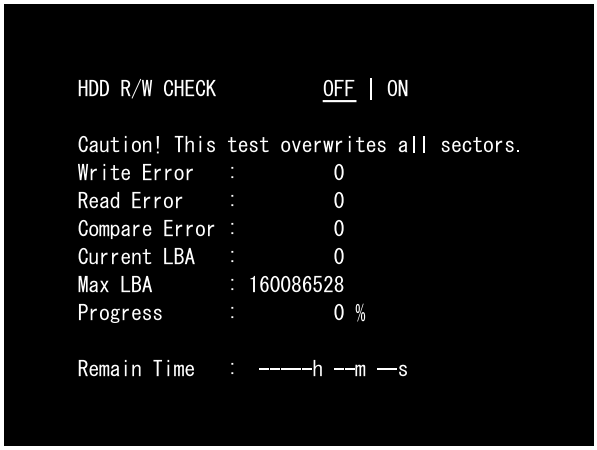


Example: With an error

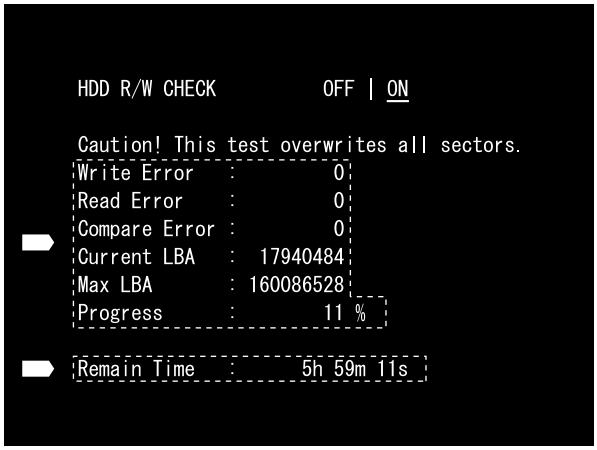


To return to the menu screen, press the "Clear" key.

⑤ Execute the HDD R/W Check.
Before executing this test, **be sure to obtain your client's consent for erasure of HDD data**.
Press the "4" key while the menu screen is displayed then the "SKIP ►►I" key to start the HDD R/W Check.
To stop executing the test (OFF) while it is in progress, press the "SKIP I◄◄" key.


HDD R/W CHECK OFF | ON
Caution! This test overwrites all sectors.
Write Error : 0
Read Error : 0
Compare Error : 0
Current LBA : 0
Max LBA : 160086528
Progress : 0 %
Remain Time : ----h --m --s

The display on the left indicates the progress of the test.
The percentage of the test progress is displayed on the screen, and the test is finished when the percentage reaches 100%.

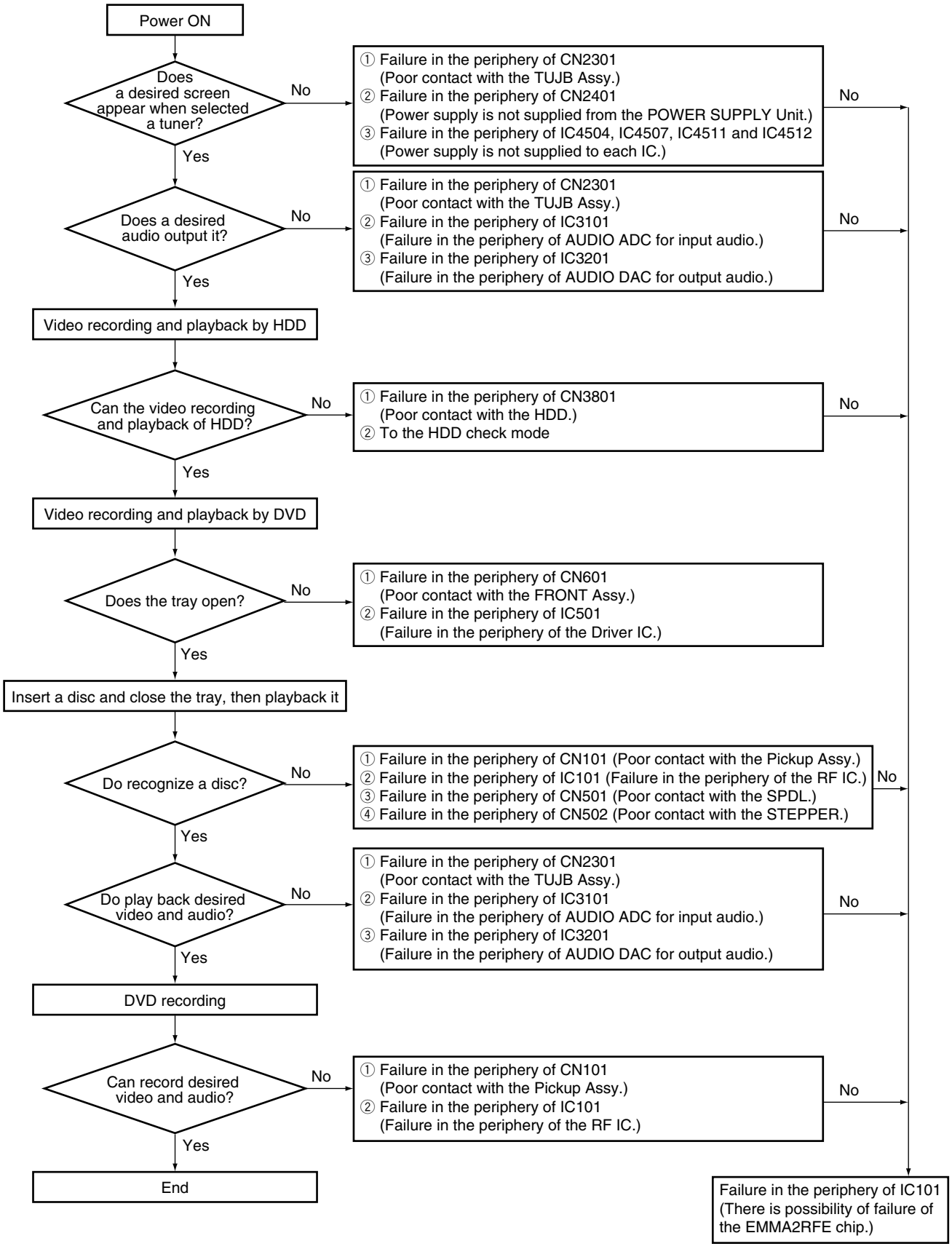

HDD R/W CHECK OFF | ON
Caution! This test overwrites all sectors.
Write Error : 0
Read Error : 0
Compare Error : 0
Current LBA : 17940484
Max LBA : 160086528
Progress : 11 %
Remain Time : 5h 59m 11s

Detailed description on each item on the screen
- Write Error: Number of write errors
- Read Error: Number of read errors
- Compare Error: Number of comparison errors
- Current LBA: The address during testing
- Max LBA: Highest address number of the HDD
- Progress: Percentage of test progress (%)
- Remain Time: Estimated time required for finishing the test across all sectors.
  Estimated time: 6.4 hours/160 GB
  3.2 hours/80 GB

Diagnosis results
- If no error occurs in any of the Write/Read/Compare items, the HDD is in normal condition and is not required to be replaced. A block other than the HDD is in failure.
- If any error occurs, the HDD must be replaced.

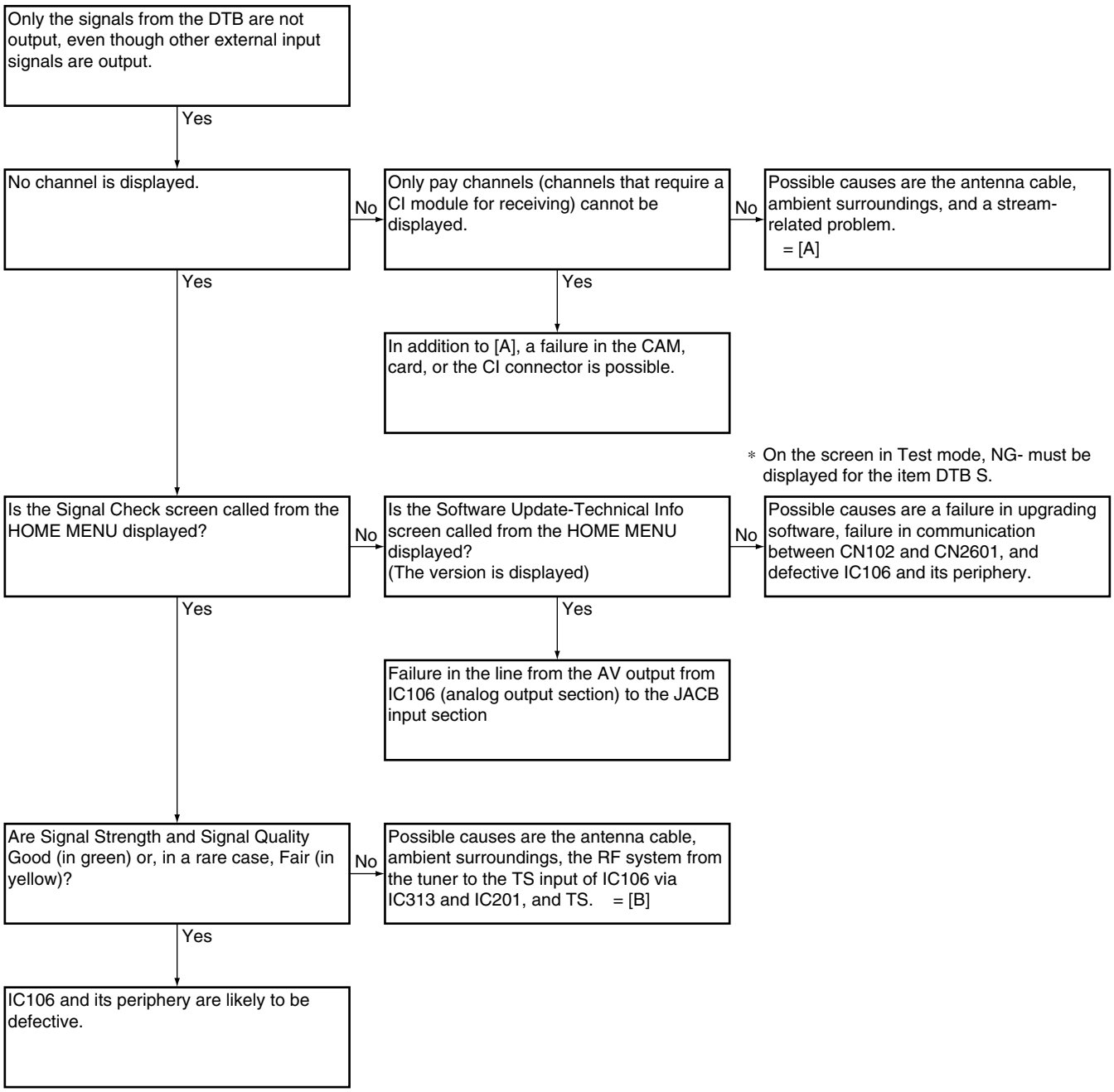
To terminate the diagnostic program, press the "ESC" key.

7.1.9 DIAGNOSIS OF THE MAIN ASSY


Power ON
Does a desired screen appear when selected a tuner?
No
① Failure in the periphery of CN2301 (Poor contact with the TUJB Assy.)
② Failure in the periphery of CN2401 (Power supply is not supplied from the POWER SUPPLY Unit.)
③ Failure in the periphery of IC4504, IC4507, IC4511 and IC4512 (Power supply is not supplied to each IC.)
Yes
Does a desired audio output it?
No
① Failure in the periphery of CN2301 (Poor contact with the TUJB Assy.)
② Failure in the periphery of IC3101 (Failure in the periphery of AUDIO ADC for input audio.)
③ Failure in the periphery of IC3201 (Failure in the periphery of AUDIO DAC for output audio.)
Yes
Video recording and playback by HDD
Can the video recording and playback of HDD?
No
① Failure in the periphery of CN3801 (Poor contact with the HDD.)
② To the HDD check mode
Yes
Video recording and playback by DVD
Does the tray open?
No
① Failure in the periphery of CN601 (Poor contact with the FRONT Assy.)
② Failure in the periphery of IC501 (Failure in the periphery of the Driver IC.)
Yes
Insert a disc and close the tray, then playback it
Do recognize a disc?
No
① Failure in the periphery of CN101 (Poor contact with the Pickup Assy.)
② Failure in the periphery of IC101 (Failure in the periphery of the RF IC.)
③ Failure in the periphery of CN501 (Poor contact with the SPDL.)
④ Failure in the periphery of CN502 (Poor contact with the STEPPER.)
Yes
Do play back desired video and audio?
No
① Failure in the periphery of CN2301 (Poor contact with the TUJB Assy.)
② Failure in the periphery of IC3101 (Failure in the periphery of AUDIO ADC for input audio.)
③ Failure in the periphery of IC3201 (Failure in the periphery of AUDIO DAC for output audio.)
Yes
DVD recording
Can record desired video and audio?
No
① Failure in the periphery of CN101 (Poor contact with the Pickup Assy.)
② Failure in the periphery of IC101 (Failure in the periphery of the RF IC.)
Yes
End
No
No
No
No
No
Failure in the periphery of IC101 (There is possibility of failure of the EMMA2RFE chip.)

7.1.10 DIAGNOSIS OF THE DTBR ASSY

The DTB (Digital Terrestrial Board) does not function


Only the signals from the DTB are not output, even though other external input signals are output.
Yes
No channel is displayed.
No
Only pay channels (channels that require a CI module for receiving) cannot be displayed.
No
Possible causes are the antenna cable, ambient surroundings, and a stream-related problem.
= [A]
Yes
Yes
In addition to [A], a failure in the CAM, card, or the CI connector is possible.
* On the screen in Test mode, NG- must be displayed for the item DTB S.
Is the Signal Check screen called from the HOME MENU displayed?
No
Is the Software Update-Technical Info screen called from the HOME MENU displayed?
(The version is displayed)
No
Possible causes are a failure in upgrading software, failure in communication between CN102 and CN2601, and defective IC106 and its periphery.
Yes
Yes
Failure in the line from the AV output from IC106 (analog output section) to the JACB input section
Are Signal Strength and Signal Quality Good (in green) or, in a rare case, Fair (in yellow)?
No
Possible causes are the antenna cable, ambient surroundings, the RF system from the tuner to the TS input of IC106 via IC313 and IC201, and TS. = [B]
Yes
IC106 and its periphery are likely to be defective.

- Except when the local regulator is in failure, a power failure (blown a fuse, etc.) makes other input systems abnormal.
- If mosaic images are often displayed, check the items in [B].
- If the audio from only the DTB is defective, check the items in [B] and the line from the audio output from IC106 (analog output section) to the JACB input section.

7.1.11 NOTE ON REPLACEMENT OF THE SDRAM

Note when replacing the SDRAM

When replacement of the SDRAM (IC1201 or IC1221) on the MAIN Assy is required, identify the manufacturer of the SDRAM.
If the SDRAM that needs replacement was manufactured by HYNIX, both IC1201 and IC1221 must be replaced at the same time.
SDRAMs for service are manufactured by SAMSUNG.

- **How to identify the manufacturer**
  Confirm the name of the manufacturer stamped on the surface of the part.

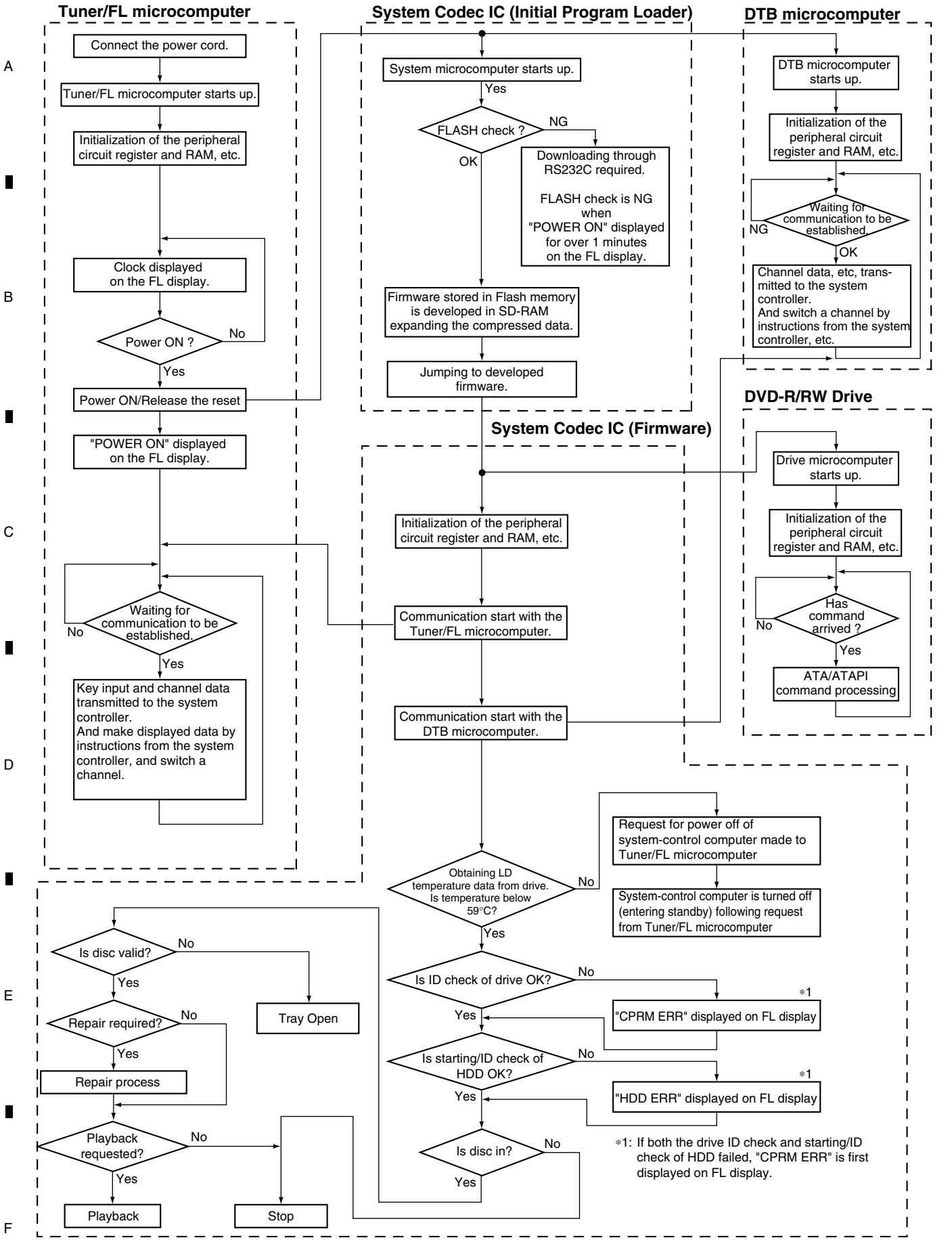
By HYNIX (replacement of both SDRAMs required)

By SAMSUNG (replacement of only the defective SDRAM possible)

- **Measures to be taken**
  ① If the SDRAM that needs replacement was manufactured by HYNIX:
  Replace both IC1201 and IC1221 at the same time.
  ② If the SDRAM that needs replacement was manufactured by SAMSUNG:
  Replacement of only the defective SDRAM (IC1201 or IC1221) is possible.

- **Possible malfunctions**
  If SDRAMs made by different manufacturers are mounted on the MAIN Assy, the following malfunctions may occur:
  ① The power does not come on.
  ② High-speed dubbing disabled
  ③ Other malfunctions related to the SDRAM

7.1.12 SETUP SEQUENCE


Tuner/FL microcomputer
Connect the power cord.
Tuner/FL microcomputer starts up.
Initialization of the peripheral circuit register and RAM, etc.
Clock displayed on the FL display.
Power ON ?
No
Yes
Power ON/Release the reset
"POWER ON" displayed on the FL display.
Waiting for communication to be established.
No
Yes
Key input and channel data transmitted to the system controller.
And make displayed data by instructions from the system controller, and switch a channel.
System Codec IC (Initial Program Loader)
System microcomputer starts up.
Yes
FLASH check ?
NG
OK
Downloading through RS232C required.
FLASH check is NG when "POWER ON" displayed for over 1 minutes on the FL display.
Firmware stored in Flash memory is developed in SD-RAM expanding the compressed data.
Jumping to developed firmware.
System Codec IC (Firmware)
Initialization of the peripheral circuit register and RAM, etc.
Communication start with the Tuner/FL microcomputer.
Communication start with the DTB microcomputer.
DTB microcomputer
DTB microcomputer starts up.
Initialization of the peripheral circuit register and RAM, etc.
Waiting for communication to be established.
NG
OK
Channel data, etc, transmitted to the system controller.
And switch a channel by instructions from the system controller, etc.
DVD-R/RW Drive
Drive microcomputer starts up.
Initialization of the peripheral circuit register and RAM, etc.
Has command arrived ?
No
Yes
ATA/ATAPI command processing
Obtaining LD temperature data from drive. Is temperature below 59°C?
No
Yes
Request for power off of system-control computer made to Tuner/FL microcomputer
System-control computer is turned off (entering standby) following request from Tuner/FL microcomputer
Is ID check of drive OK?
No
Yes
*1
"CPRM ERR" displayed on FL display
Is starting/ID check of HDD OK?
No
Yes
*1
"HDD ERR" displayed on FL display
Is disc in?
No
Yes
*1: If both the drive ID check and starting/ID check of HDD failed, "CPRM ERR" is first displayed on FL display.
Is disc valid?
No
Yes
Tray Open
Repair required?
No
Yes
Repair process
Playback requested?
No
Yes
Playback
Stop

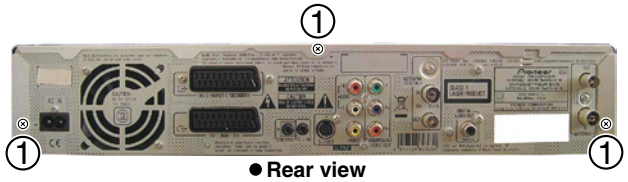
7.1.13 DISASSEMBLY

Note 1: Do NOT look directly into the pickup lens. The laser beam may cause eye injury.
Note 2: Even if the unit shown in the photos and illustrations in this manual may differ from your product, the procedures described here are common.
Note 3: For performing the diagnosis shown below, the following jigs for service is required:
- Emergency disc ejection rod (GGF1529)
- Jig cable for service (VKP2291)
- Extension board (GGF1533 (A)), (GGF1533 (B)) + Extension cable (GGD1437)

Diagnosis

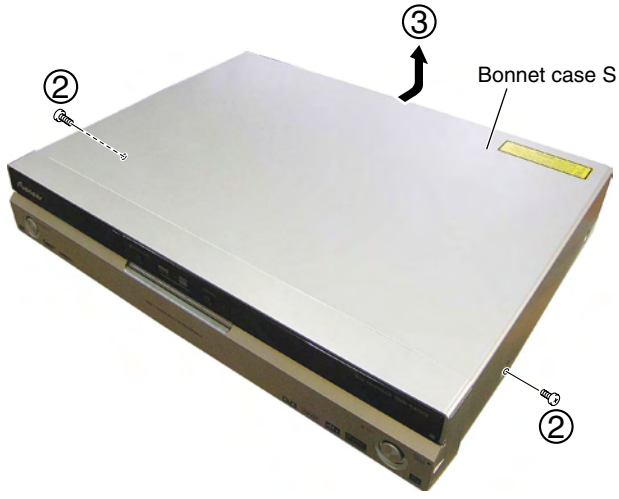
1 Bonnet Case S

① Remove the three screws.



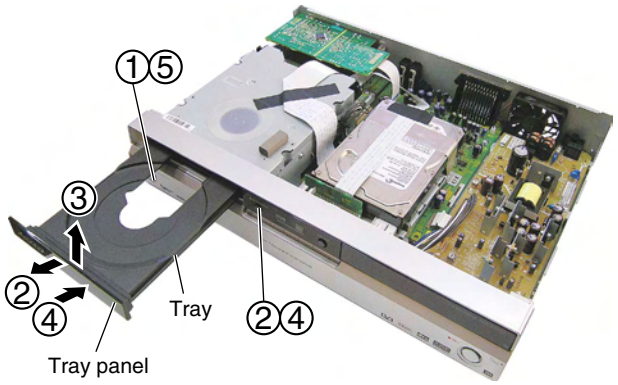
● Rear view

② Remove the two screws.
③ Remove the bonnet case S.



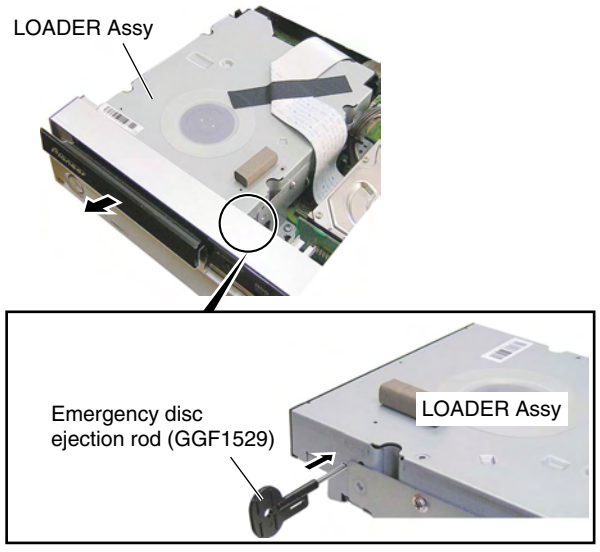
2 Tray Panel

① Press the ⏻ STANDBY/ON button to turn on the power.
② Press the ⏏ OPEN/CLOSE button to open the tray.
③ Remove the tray panel.
④ Press the ⏏ OPEN/CLOSE button to close the tray.
⑤ Press the ⏻ STANDBY/ON button to turn off the power.



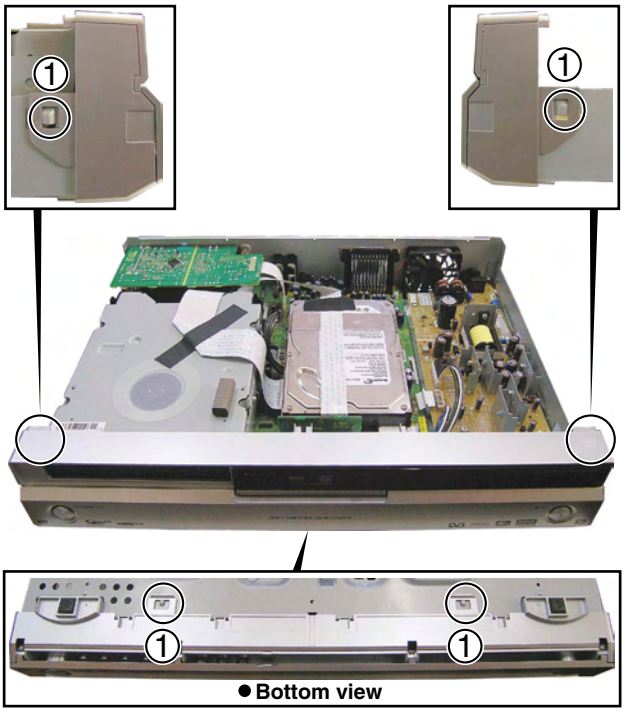
● **How to open the tray when the power cannot be turned on**

When the tray cannot be opened because the power cannot be turned on, it can be opened using the emergency disc ejection rod (GGF1529). (A long, thin rod about 1 mm in diameter can be used in place of the rod.)



3 Front Panel Section

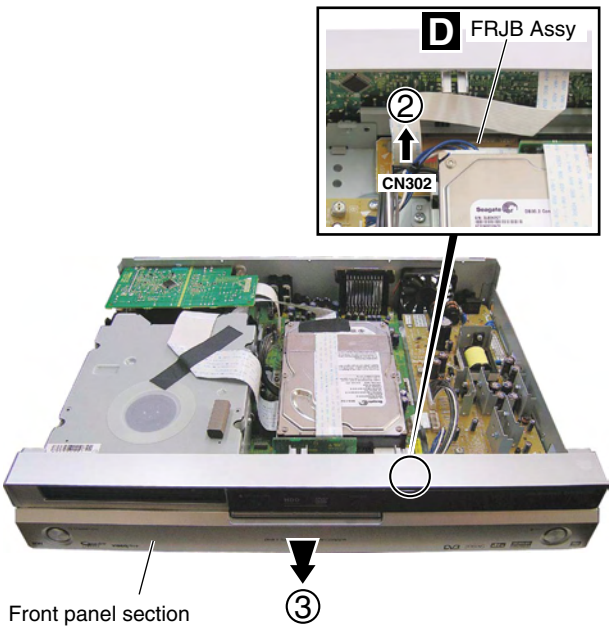
① Unhook the four hooks.



● Bottom view

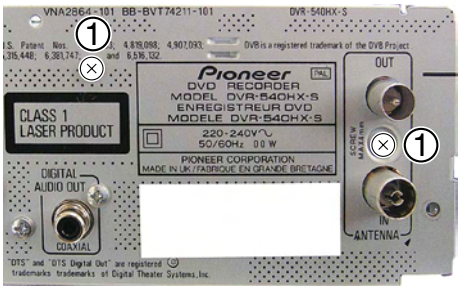
② Disconnect the one flexible cable.

③ Remove the front panel section.



4 TUNB Assy

① Remove the two screws.



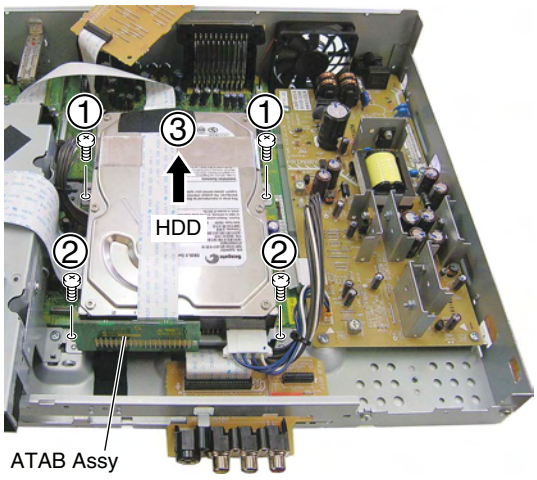
● Rear view

② Remove the TUNB Assy.

5 HDD and LOADER Assy

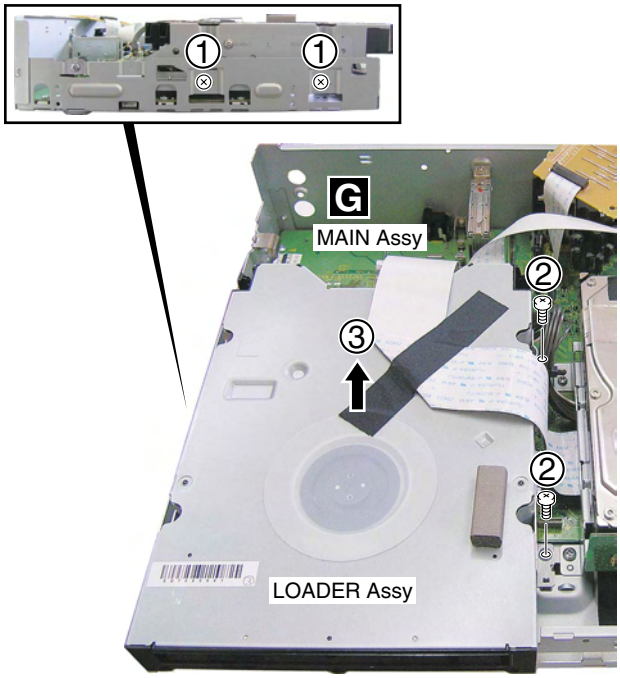
• HDD

① Remove the two screws.
② Remove the two screws.
③ Remove the HDD with the ATAB Assy and the HDD stay. (Disconnect cables, as required.)



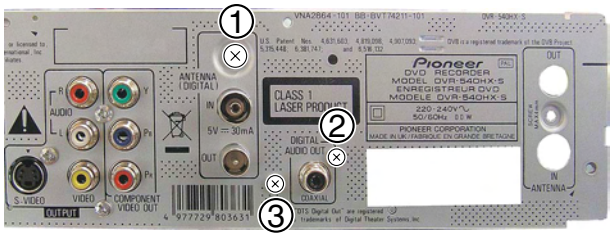
• LOADER Assy

① Remove the two screws.
② Remove the two screws.
③ Remove the LOADER Assy with the writer stays L and R. (Disconnect cables, as required.)



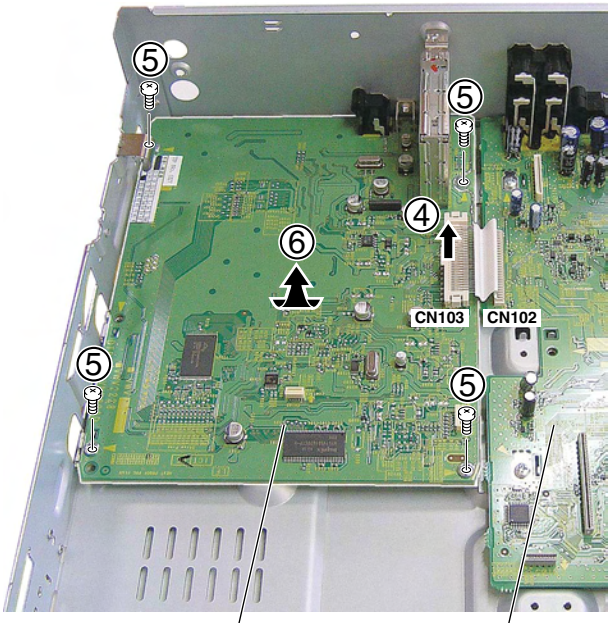
6 DTBR Assy

① Remove the one screw.
② Remove the one screw.
③ Remove the one screw.



● Rear view

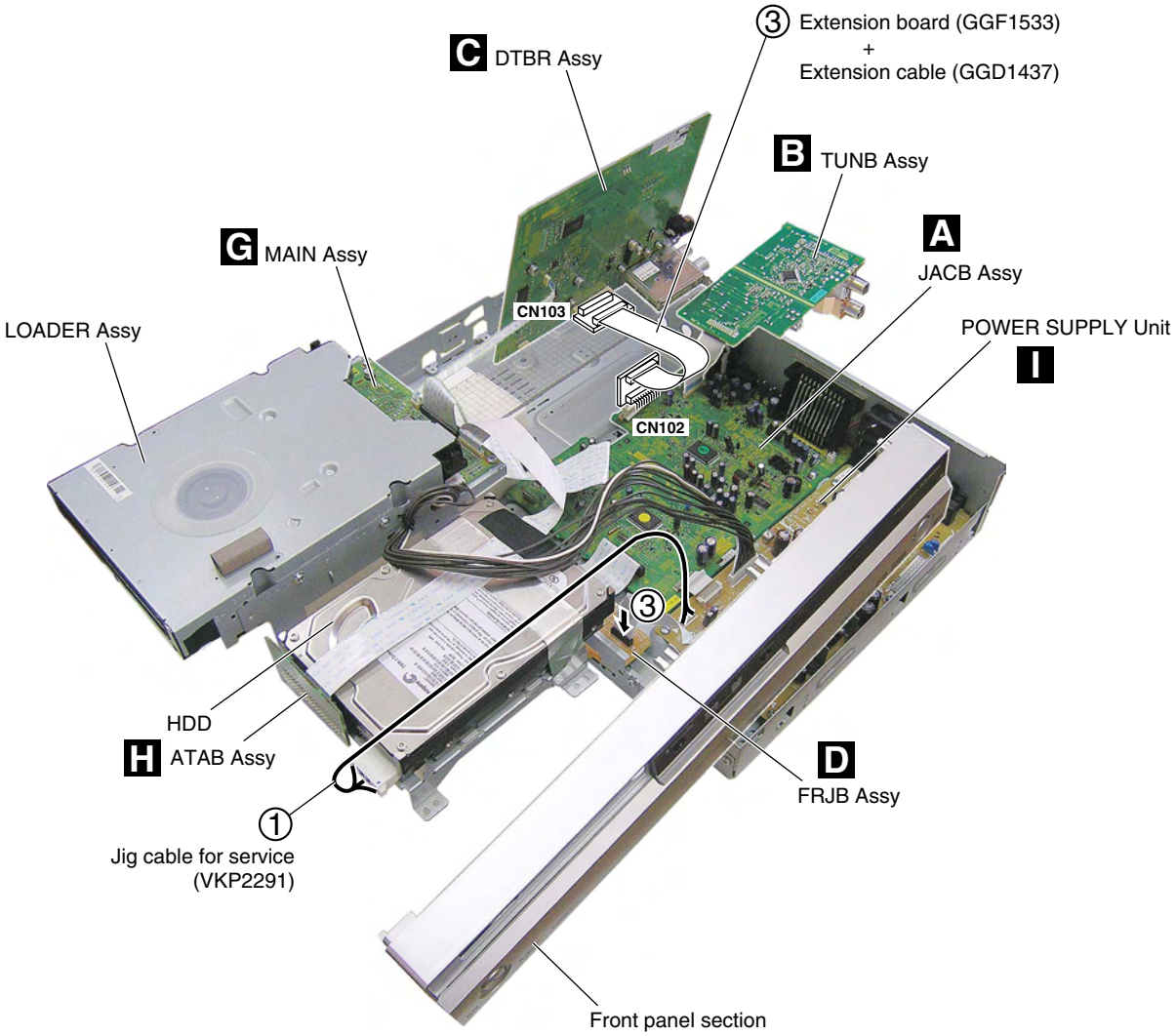
④ Disconnect the connector.
⑤ Remove the four screws.
⑥ Remove the DTBR Assy.



7 Diagnosis

① Connect the jig cable for service.
② Connect the extension boards and extension cable.
③ Reassembling the front panel section.
④ Arrange the unit as shown in the photo below.

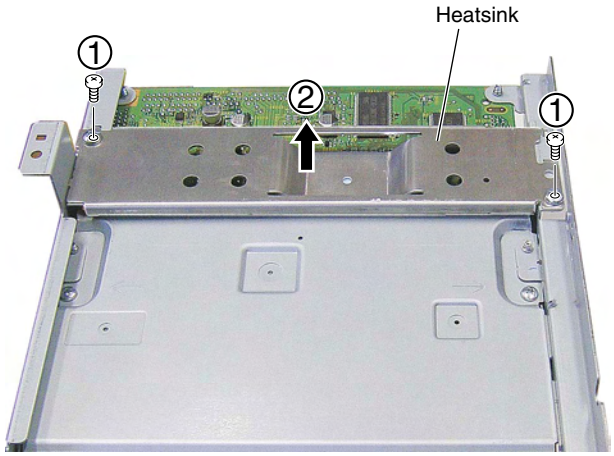
Diagnosis



Access to the MAIN Assy, Cleanning the Pickup Lens

• Heatsink

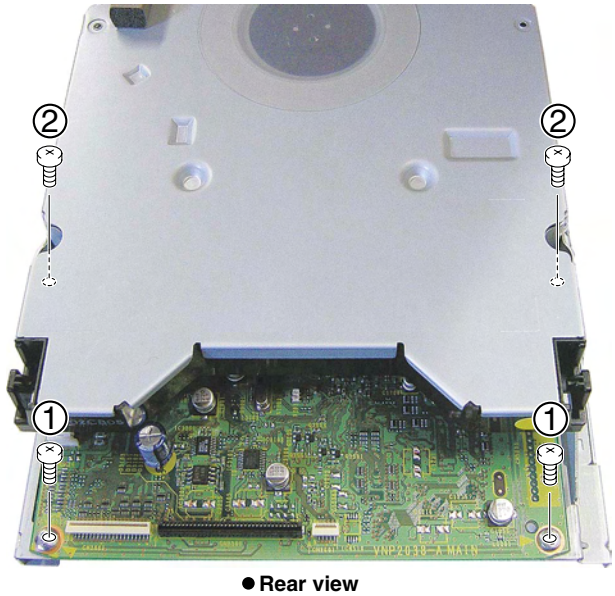
① Remove the two screws.
② Remove the heatsink.



● Bottom view

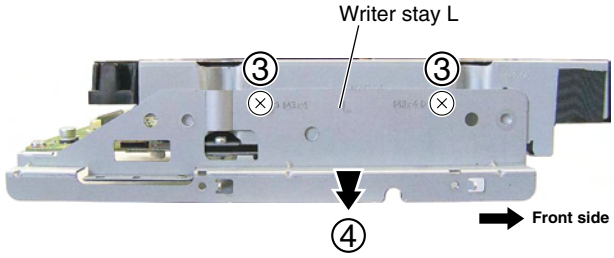
• Writer Stay L and R

① Remove the two screws.
② Remove the two screws.

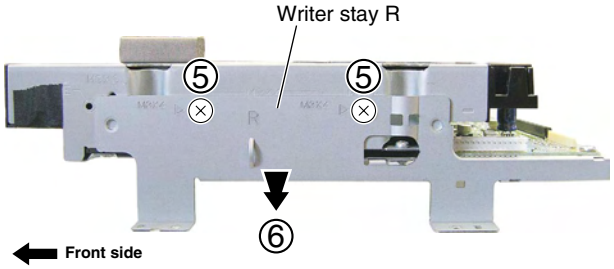


● Rear view

③ Remove the two screws.
④ Remove the writer stay L.



⑤ Remove the two screws.
⑥ Remove the writer stay R.

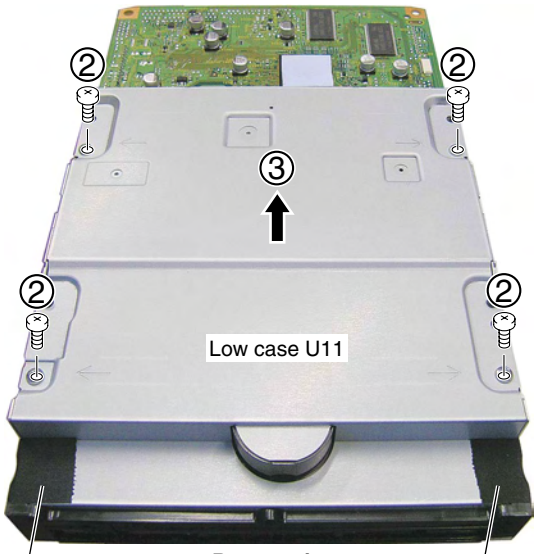


• Low Case U11 and UP Case S

① Remove the two tapes.

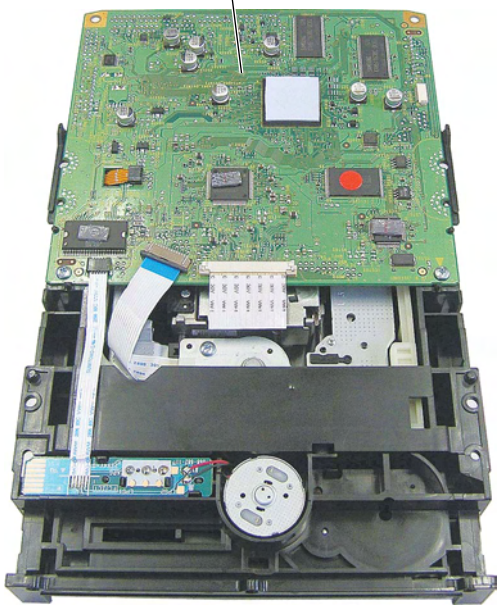
② Remove the four screws.

③ Remove the low case U11.



● Bottom view

G MAIN Assy

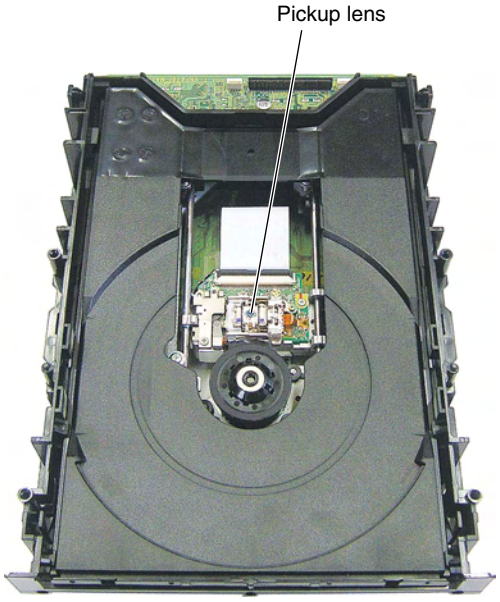


● Bottom view

④ Remove the UP case S.

Before shipment, be sure to clean the pickup lens, using the following cleaning materials:

Cleaning liquid : GEM1004
Cleaning paper : GED-008



7.2 IC

• The information shown in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.

● **List of IC**

PMC008A8, UPD61272F1-107KA3A, PCA9557PW, AK5359ET, BH7236AF, UPD6110GM-100UEVA, STV0361L, TC7WB125FK, UPC3221GV, MM1689FH

■ PMC008A8 (JACB ASSY : IC101)

• TUNER Microcomputer

● **Pin Function**

No.	Mark	Pin Name	I/O	Pin Function
1	PA3/SO8	FLDATA	O	Communication line with FL driver From tuner controller to FL driver
2	PA4/SI8/SB8	FLSTB	O	Communication strobe signal with FL driver
3	PA5/SCK8	FLCLK	O	Communication clock with FL driver
4	P70/INT0/T0LCP	WDT	I	WDT for microcomputer runaway detection RC is external connection. H: Forced reset
5	P71/INT1/T0HCP	ACDET	I	Existence detection of AC power Level interrupt
6	P72/INT2/T0IN/T0LCP	HS_MTOT	I	System controller communication handshake From system controller to Tuner controller
7	P73/INT3/T0IN/T0HCP	IR	I	Pulse input of the remote control unit
8	RES#	XTRESET	I	Reset input
9	XT1	XT1	I	Sub clock connection 32.768kHz
10	XT2	XT2	O	Sub clock connection
11	VSS1	GND	–	Ground
12	CF1	CF1	I	Main clock connection 15MHz
13	CF2	CF2	O	Main clock connection
14	VDD1	VDD1	–	Power supply
15	P80/AN0	MODEL1	AI	Input 1 for destination judgment
16	P81/AN1	MODEL2	AI	Input 2 for destination judgment
17	P82/AN2	KEY1	AI	Main unit key input 1
18	P83/AN3	KEY2	AI	Main unit key input 2
19	P84/AN4	KEY3	AI	Main unit key input 3
20	P85/AN5	AGC	AI	AGC voltage input from the tuner For simple check
21	P86/AN6	BATTERY	AI	Input for battery voltage check Can measure only during 5V operation
22	P87/AN7	FUNC	AI	SCART Function signal input
23	P10/SO0	SDET3	I	Plug detection of S terminal 3
24	P11/SI0/SB0	SDET2	I	Plug detection of S terminal 2
25	P12/SCK0	SDET1	I	Plug detection of S terminal 1
26	P13/SO1	AVLOUT	O	NexTViewLink output signal Negative logic Reverse on the SCART terminal
27	P14/SI1/SB1	SDA	O/D	IIC communication (data)
28	P15/SCK1	SCL	O/D	IIC communication (clock)
29	P16/T1PWML	XSYSRST	O	IC reset signal of whole system
30	P17/T1PWMH/BUZ	TUDET	I	The old and the new distinction of the tuner pack L: New tuner, H: Old tuner
31	PE0/AN12	MUTEV	O	CVBS for video driver IC and Y/C mute signal L: Mute, H: Release Fix to L because mute does not control.
32	PE1/AN13	IRB_EN	I	IR blaster function valid selection Open: IR blaster invalidity, GND: IR blaster is valid
33	PE2/AN14	AMUTE2	O	Audio mute signal of output stage Negative logic H: Release, L: Mute
34	PE3/AN15	SELV1	O	Input switch of video selector Not used
35	PE4	SELV2	O	Input switch of video selector Not used
36	PE5	SELV3	O	Video switch for digital tuner
37	PE6	YVSEL	O	CVBS or Y/C switch of video selector YOUT-SEL of LA73031
38	PE7	SWSTBY	O	Standby mode switch of video selector Not used
39	VSS4	GND	–	Ground
40	VDD4	VDD4	–	Power supply

No.	Mark	Pin Name	I/O	Pin Function
41	PF0	LET/FUNC_ON	O	Letter-box output superimposed signal Function output signal for Europe model
42	PF1	SQU	O	Squeeze output superimposed signal
43	PF2	CONDET	I	Electric discharge detection of capacitor for power supply backup Readout after cold-start immediately. If it was L, reduce the voltage.
44	PF3	S1	O	S1/S2 switching signal
45	PF4/IRP	IROUT	O	Pulse output for IR blaster
46	PF5	P_SAVE2	O	Power save mode switch of HA118326
47	PF6	PSMUTE	O	Audio mute control of SCART
48	PF7	XAVLTH	O	Through switch of AV.Link communication line
49	SI2P0/SO2	SO2	O	SIO2 transmission Not used.
50	SI2P1/SI2/SB2	SI2	O	SIO2 reception Not used.
51	SI2P2/SCK2	SCK2	O	SIO2 communication clock Not used.
52	SI2P3/SCK20	RFTHRU	O	RF through switch of the tuner Control with the main unit setting during standby.
53	PWM1	NC	O	Non connection
54	PWM0	FANCTRL	O	Radiation of heat fan rotating speed control H: Top speed, L: Stop Intermediate speed realizes by PWM
55	VDD2	VDD2	–	Power supply
56	VSS2	GND	–	Ground
57	P00	P_CONT2	O	Power supply control of the main board For controlling 2.5V and 3.3V
58	P01	MUTECTL	O	Mute invalidity control Port to suppress last stage mute
59	P02	EPGEXT	O	Equalizer switch of slicer input video
60	P03	TUON	O	Power supply control of the tuner section There is a case to turn on the power during standby independently.
61	P04	SWVION	O	Power supply control of Japan/North America video system Non connection in Europe and General
62	P05/CKO	P_CONT	O	Power supply control of the whole system
63	P06/T6O	FLPON	O	Power supply control of the FL tube
64	P07/T7O	XP_SAVE	O	Power supply control of Europe video system Set to SWVION on the source.
65	P20/INT4/T1IN/T0LCP/T0HCP/INT6/T0LCP1/SSGI0	STATCHG	I	Multiplex status change detection of MSP D_CTR_I/O_1 of MSP
66	P21/INT4/T1IN/T0LCP/T0HCP	J_CLOCK	I	Input audio for Just Clock Pulse input of the tuner audio Not used
67	P22/INT4/T1IN/T0LCP/T0HCP/HCTR	CSYNCIN	I	C-Sync for Auto-Rec
68	P23/INT4/T1IN/T0LCP/T0HCP	XCHECKER	I	Unit checker mounting distinction
69	P24/INT5/T1IN/T0LCP/T0HCP/INT7/T0HCP1/SSGI1	MRST	I	Main board power failure detection Edge interrupt
70	P25/INT5/T1IN/T0LCP/T0HCP	AVLIN	I	NexTViewLink input line
71	P26/INT5/T1IN/T0LCP/T0HCP	X525P	I	525P output signal from the system controller Not used.
72	P27/INT5/T1IN/T0LCP/T0HCP	BLANKIN	I	BLANK signal input of the SCART
73	P30/PWM4	LED_DVD	O	DVD Indicator
74	P31/PWM5	TU_DCCON	O	DC/DC converter For +32V generation 200kHz, 2(H): PWM output of 1 (L)
75	P32/UTX1	TXD1	O	Transmission for RS-232C terminal
76	P33/URX1	RXD1	I	Reception for RS-232C terminal
77	P34/UTX2	TXD2	O	UART2 transmission Not used.
78	P35/URX2	RXD2	O	UART2 reception Not used.
79	P36	HS_TTOM	O	System controller communication handshake From tuner controller to system controller
80	VDDODA	VDDODA	–	Power supply

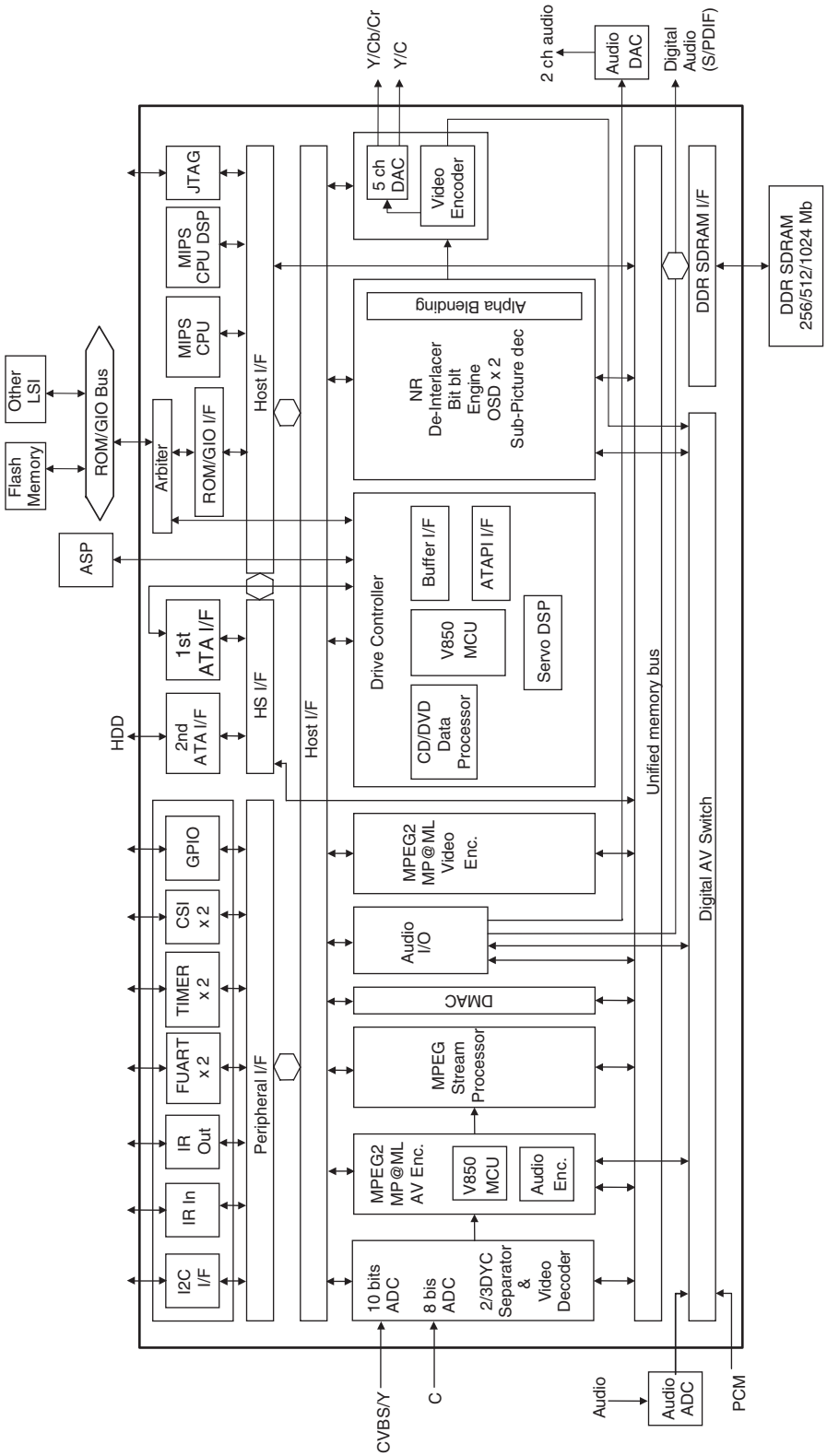
No.	Mark	Pin Name	I/O	Pin Function
81	PB6/CVD/CSYNC	CVBSIN	I	Input video for data slicer 1.0Vpp
82	VSSVCO	GND	–	Ground
83	PB4/FILTSLC	FILTSLC	I	External filter for slicer PLL
84	VDDVCO	VDDVCO	–	Power supply
85	PB2	DT_TUON	O	Power control for DTB
86	PB1	ANT5V_SW	O	Antenna power control for digital broadcasting
87	PB0/DS1FLD	DET_ANT	O	Shortcircuit detection for antenna power line
88	VSS3	GND	–	Ground
89	VDD3	VDD3	–	Power supply
90	PC7/DBGP2	DBGP2	O/D	Control port for on-chip debugger
91	PC6/DBGP1	DBGP1	O/D	Control port for on-chip debugger
92	PC5/DBGP0	DBGP0	O/D	Control port for on-chip debugger
93	PC4/AN11	LED_HDD	O	HDD Indicator
94	PC3/AN10	NC	O	Non Connection
95	PC2/AN9	NC	O	Non Connection
96	PC1/AN8	NC	O	Non Connection
97	PC0/OCSYNC	NC	O	Non Connection
98	PA0/SO7	SD_TTOM	O	System controller communication data line From tuner controller to system controller
99	PA1/SI7/SB7	SD_MTOT	I	System controller communication data line From system controller to tuner controller
100	PA2/SCK7	SCK_MTOT	I	System controller communication clock From system controller to tuner controller

■ UPD61272F1-107KA3A (MAIN ASSY : IC1001)

(EMMA2RFE)

• DVDR IC

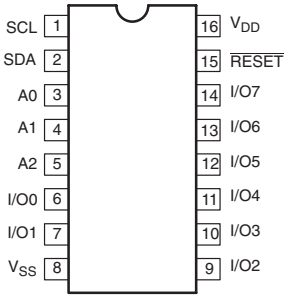
● BLOCK DIAGRAM



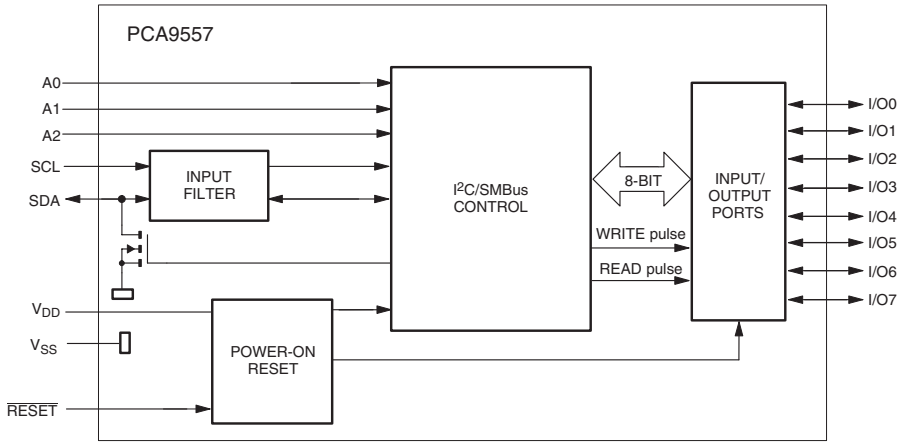
■ PCA9557PW (MAIN ASSY : IC3802)

• 8Bit IIC to PARA IC

● PIN LAYOUT



● BLOCK DIAGRAM



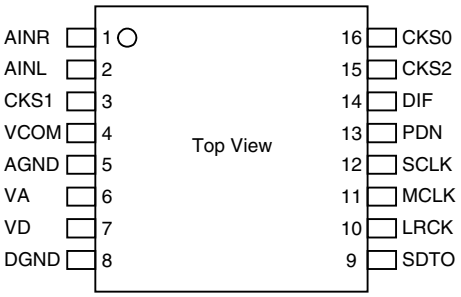
● PIN FUNCTION

Pin No.	Name	Function
1	SCL	Serial clock line
2	SDA	Serial data line
3	A0	Address input 0
4	A1	Address input 1
5	A2	Address input 2
6	I/O0	I/O0 (open drain)
7	I/O1	I/O1
8	V_{SS}	Supply ground
9±14	I/O2±I/O7	I/O2 to I/O7
15	$\overline{RESET}$	Active-LOW reset input
16	V_{DD}	Supply voltage

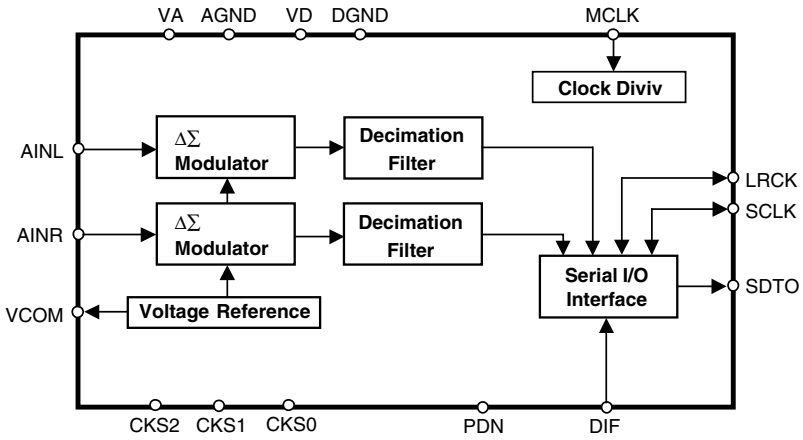
■ AK5359ET (MAIN ASSY : IC3101)

• AD Converter

● Pin Arrangement



● Block Diagram



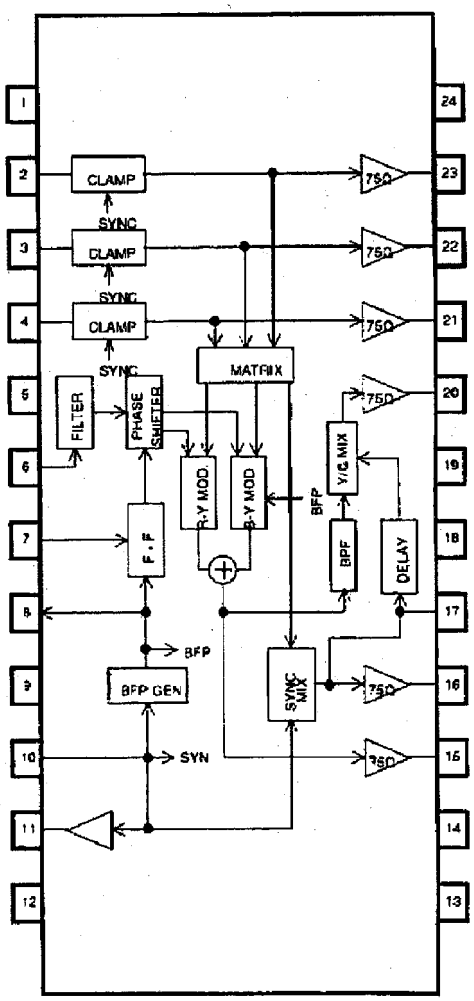
● Pin Function

No.	Pin Name	I/O	Pin Function
1	AINR	I	Rch Analog Input Pin
2	AINL	I	Lch Analog Input Pin
3	CKS1	I	Mode Select 1 Pin
4	VCOM	O	Common Voltage Output Pin, VA/2 Bias voltage of ADC input.
5	AGND	–	Analog Ground Pin
6	VA	–	Analog Power Supply Pin, 4.5 – 5.5V
7	VD	–	Digital Power Supply Pin, 3.0 – 5.5V
8	DGND	–	Digital Ground Pin
9	SDTO	O	Audio Serial Data Output Pin "L" Output at Power-down mode.
10	LRCK	I/O	Output Channel Clock Pin "L" Output in Master Mode at Power-down mode.
11	MCLK	I	Master Clock Input Pin
12	SCLK	I/O	Audio Serial Data Clock Pin "L" Output in Master Mode at Power-down mode.
13	PDN	I	Power Down Mode & Reset Pin "H" : Power up, "L" : Power down & Reset The AK5359 must be reset once upon power-up.
14	DIF	I	Audio Interface Format Pin "H" : 24bit I2S Compatible, "L" : 24bit MSB justified
15	CKS2	I	Mode Select 2 Pin
16	CKS0	I	Mode Select 0 Pin

■ BH7236AF (JACB ASSY : IC511)

• Color TV Signal Encoder

● BLOCK DIAGRAM



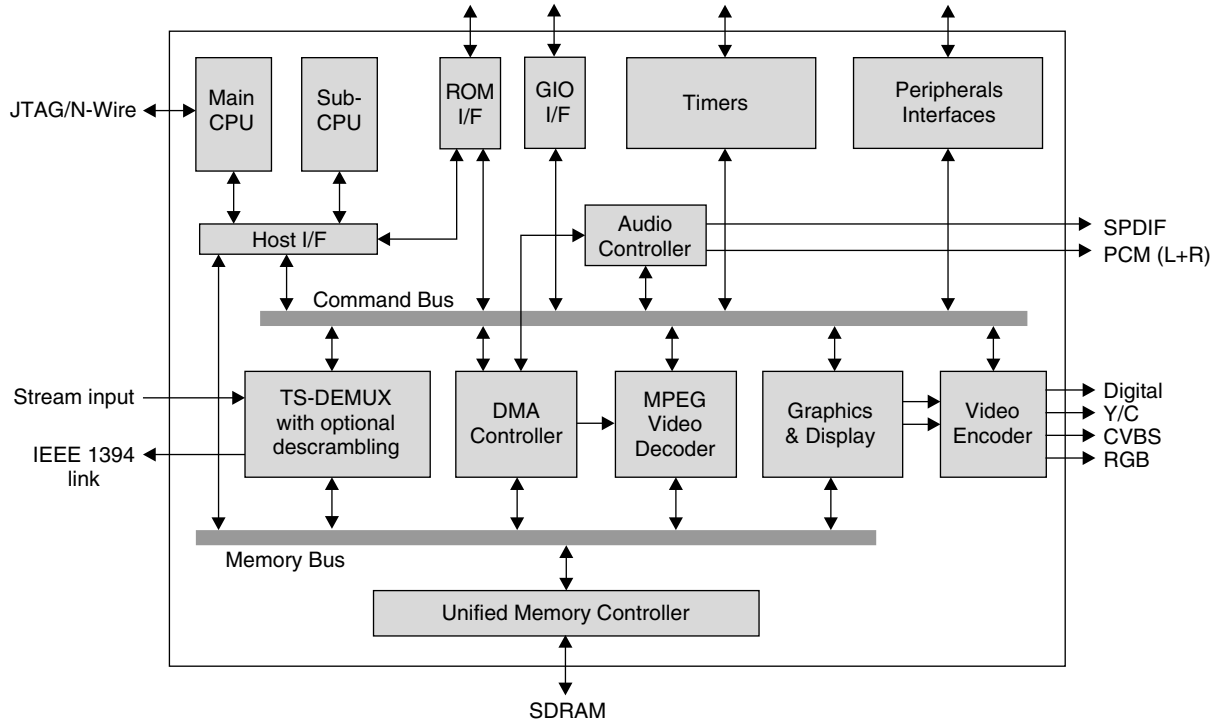
● PIN FUNCTION

Terminal No.	Terminal name	Description of terminals	Termina No.	Terminal name	Description of terminals
1	GND1	Ground terminal except 75Ω driver	13	N.C.	No Connection
2	RIN	Analog Red signal input terminal.	14	N.C.	No Connection
3	GIN	Analog Green signal input terminal.	15	COUT	Chroma signal output terminal.
4	BIN	Analog Blue signal input terminal.	16	YOUT	Luminance signal output terminal.
5	N.C.	No Connection	17	YTRAP	Luminance trap filter terminal.
6	SCIN	Color subcarrier input terminal.	18	N.C.	No Connection
7	NT/PAL	Input terminal for the selection of TV format.	19	VCC2	Power supply terminal for 75Ω driver.
8	BFPOUT	Burst timing signal output terminal.	20	VOUT	Composite video output terminal.
9	N.C.	No Connection	21	BOUT	Analog B signal output terminal.
10	SYNCIN	Composite sync input terminal.	22	GOUT	Analog G signal output terminal.
11	SYNCOUT	Composite sync output terminal.	23	ROUT	Analog R signal output terminal.
12	VCC1	Power supply terminal except 75Ω driver.	24	GND2	Ground terminal for 75Ω driver

■ UPD6110GM-100UEVA (DTBR ASSY : IC106)

• DTB Receiver/Decoder

● Block Diagram



● Pin Function

Table 1 : Power and Ground

Pin name	Pin nos.	Description
GND	11, 12, 28, 42, 43, 54, 67, 68, 110, 138, 139, 152, 161, 162, 163, 164, 176, 184, 185, 194, 206, 214, 215	Main supply ground
DGND	84, 94, 95	Digital Ground for video DACs
AGND	77, 80, 87, 90	Analog Ground for Video DACs
PAGND	135	Ground for PLL 1.5V supply
DVDD	85, 96	Digital VDD (1.5V) for video DACs
VDD1	13, 44, 69, 134, 177, 207	1.5V supply (core)
VDD2	153, 160, 175, 186, 195, 205, 213	3.3V for Unified Memory I/F IO buffers
VDD3	27, 53, 109, 140, 216	3.3V for IO buffers
AVDD	78, 81, 88, 91	3.3V supply for Video DACs
PAVDD	136	1.5V supply for PLL

Table 2 : System

Pin name	Pin no.	Description	In/Out
CLK27IN	137	27MHz Input clock from VCXO	I
RSTOUT	142	RESET out from Watch Dog Timer	O
RSTSWB	143	Hardware RESET	I
NMI	144	Non Maskable Interrupt (see note A in **table8** below)	I

Table 3 : PCR

Pin name	Pin no.	Description	In/Out
PWMOUT	141	PWM output to control the 27MHz VCXO	O

Table 4 : JTAG

Pin name	Pin no.	Description	In/Out
JTDI	147	EJTAG data input	I
JTCK	150	EJTAG clock	I
JTDO	148	EJTAG data output	O
JTMS	149	EJTAG mode select	I
JTRST	151	EJTAG reset	I
EDINT	144[A]	Debug interrupt	I

A : In normal use, pin 144 is exclusive to the NMI input. In debugging mode, pin144 is the EDINT input.

Table 5 : Test

Pin name	Pin no.	Description	In/Out
TEST	75	For test use only. Connect to GND.	I

Table 6 : Unified Memory Interface

Pin name	Pin nos.	Description	In/Out
DADD0~DADD12	190 (DADD0), 189, 188, 187, 183, 182, 181, 180, 179, 178, 191, 174, 173 (DADD12)	Address Bus	O
DQ0~DQ15	212 (DQ0), 211, 210, 209, 208, 204, 203, 202, 166, 165, 159, 158, 157, 156, 155, 154 (DQ15)	Data Bus	I/O
DCSB	196	Chip select	O
DRASB	197	RAS signal	O
DCASB	198	CAS signal	O
DWEB	199	Command write enable	O
DQM0~DQM1	200, 169	Data mask	O
DBA0~1	193, 192	Bank address	O
DCKE	172	Clock enable	O
DQS1	167	Connect to DCLK	I
DCLK	171	Clock output	O

Table 7 : Audio Output

Pin name	Pin no.	Description	In/Out
AMCK	66	PCM Audio Master Clock	O
ALRCK	73	PCM Audio L/R Clock	O
ABCK	70	PCM Audio Data Clock	O
ADO	72	PCM Audio Data – L/R	O
ATX	71	SPDIF Digital audio output	O

Table 8 : I²C Interface

Pin name	Pin no.	Description	In/Out
SDA0	117	I²C-0 Serial Data	I/O
SCL0	118	I²C-0 Serial Clock	I/O

Table 9 : Video DAC outputs[A]

Pin name	Pin no.	Description
VACVBS	79	Composite video (analog)
VAY	76	Y signal (analog)
VAPR	86	Pr signal
VAPB	89	Pb signal
RSET0	82	Resistor for adjusting full scale currents
RSET1	92	
REF0	83	External voltage reference
REF1	93	

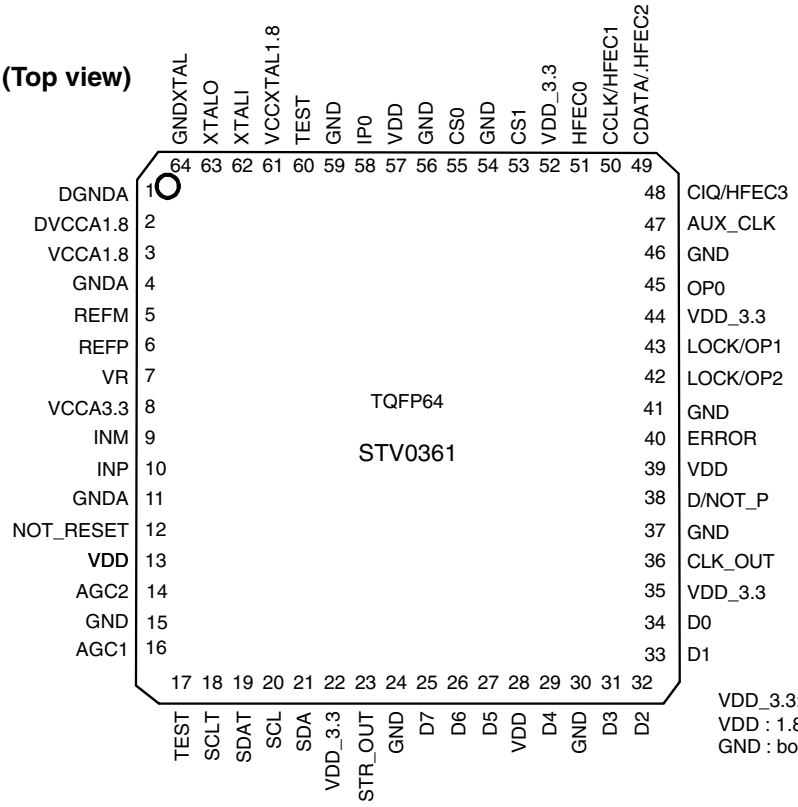
Unused pins

Pin name	Pin no.	Disposition
N/C	168	Connect to ground
N/C	170	Not connected
N/C	201	Connect to ground

■ STV0361L (DTBR ASSY : IC313)

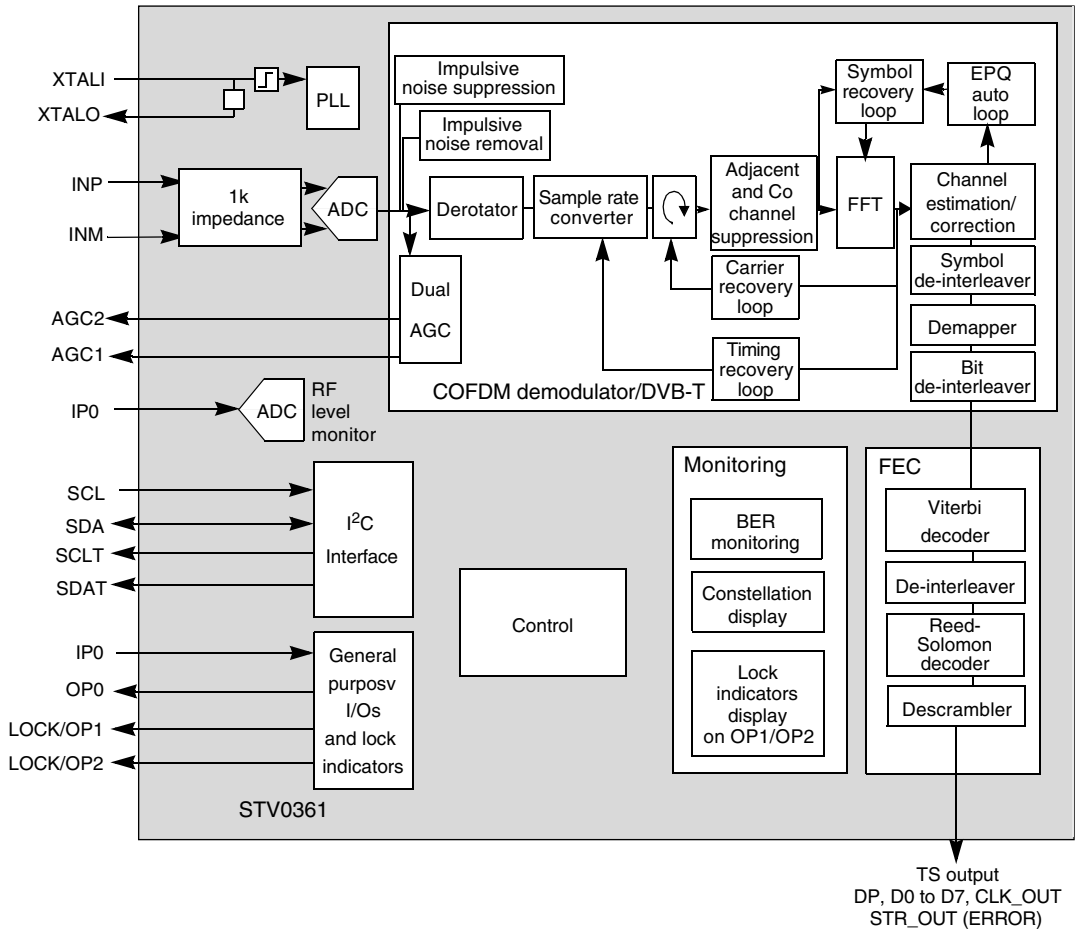
• COFDM IC

● **Pin Arrangement (Top view)**



VDD_3.3: 3.3V output buffer supply
VDD : 1.8V core and input buffer supply
GND : both core and buffer ground

● **Block Diagram**



● **Pin Function**

Pin number	Name	Type	Description	Drive (mA)
Clock and resets				
12	NOT_RESET	Input[1]	Hardware reset, active low	–
62	XTALI	Analog	Crystal oscillator input/external clock (1.8 V)	–
63	XTALO	Analog	Crystal oscillator output	–
61	VCCXTAL1.8	Supply	Analog oscillator supply (1.8 V)	–
64	GNDXTAL	Ground	Analog oscillator ground	–
Analog interface				
2	DVCCA1.8	Supply	Analog part digital supply (1.8V)	–
5	REFM	Analog	Internal negative reference	–
6	REFP	Analog	Internal positive reference	
3	VCCA1.8	Supply	Analog supply (1.8V)	–
9	INM	Analog	Negative analog input	–
10	INP	Analog	Positive analog input	–
4, 11	GNDA	Supply	Analog supply	–
1	DGNDA	Ground	Analog ground	–
7	VR	Analog	Reference	–
8	VCCA3.3	Supply	Analog supply (3.3V)	
I²C interface				
21	SDA	I/O[2]	Serial data (open drain and 5 V tolerant)	8
20	SCL	Input	Serial clock (open drain and 5 V tolerant)	–
19	SDAT	I/O	SDA tuner (open drain and 5 V tolerant)	4
18	SCLT	Input	SCL tuner (5 V tolerant)	
MPEG interface				
25, 26, 27, 29, 31, 32, 33, 34	D7/0	Output[3]	Serial D7, MPEG data	8/4
36	CLK_OUT	Output	MPEG byte or bit clock	4
23	STR_OUT	Output	MPEG first byte sync	2
38	D/NOT_P	Output	MPEG data valid/parity	4
40	ERROR	Output	MPEG packet error	2
51	HFEC0	Output	Hierarchical FEC output bit 0	2
50	CCLK/HFEC1	Output	Hierarchical FEC output bit 1 or clock for constellation display	2
49	CDATA/HFEC2	Output	Hierarchical FEC output bit 2 or data for constellation display	2
48	CIQ/HFEC3	Output	Hierarchical FEC output bit 3 or IQ validation for constellation display	2

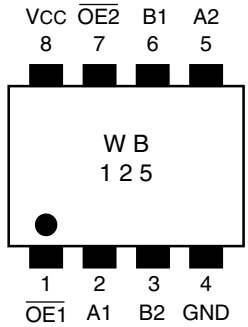
Pin number	Name	Type	Description	Drive (mA)
Front end controls				
16	AGC1	I/O	RF AGC control ΔΣ(5 V tolerant)	4
14	AGC2	I/O	IF AGC control ΔΣ(5 V tolerant)	4
17, 60	TEST		Reserved test mode, must be grounded	
58	IP0	Input	General-purpose input port 0 and ADC input for RF level monitoring	-
45	OP0	I/O	General-purpose output port 0	4
43	LOCK/OP1	I/O	General-purpose output port 1 or lock indicator	4
42	LOCK/OP2	Output	General-purpose output port 2 or lock indicator	4
47	AUX_CLK	I/O	Auxiliary clock	8
55	CS0	Input	Chip select LSB	-
53	CS1	Input	Chip select MSB	-
Power supply				
13, 28, 39, 57	VDD	Supply	Digital core supply	
22, 35, 44, 52	VDD_3.3	Supply	Digital I/O supply	
15, 24, 30, 37, 41, 46, 54, 56, 59	GND	Ground		

1. All inputs are 3.3V compatible.
2. All bidirectional pads are 3.3V capable.
3. All outputs are 3.3V capable.

■ TC7WB125FK (DTBR ASSY : IC314)

• Dual BUS Switch

● Pin Arrangement (Top view)



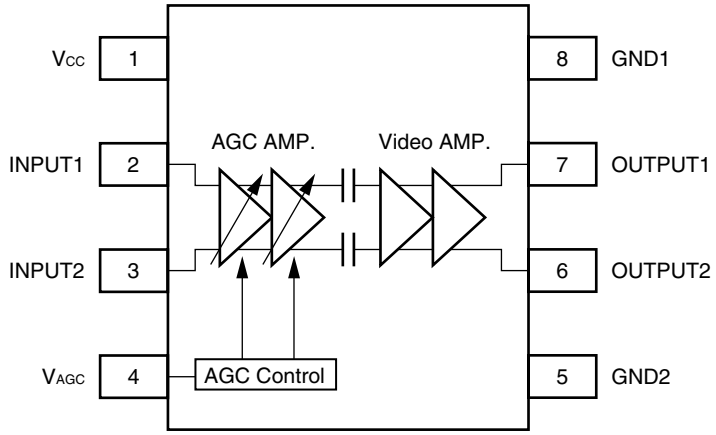
● Truth Table

Inputs $\overline{OE}$	Function
L	A port = B port
H	Disconnect

■ UPC3221GV (DTBR ASSY : IC311)

• IF AGC IC

● Pin Arrangement (Top view)



● Pin Function

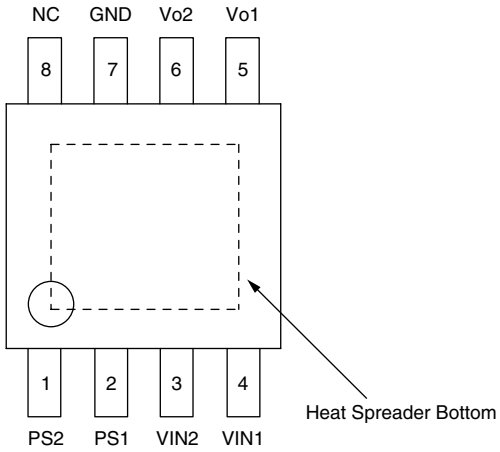
Pin No.	Pin Name	Applied Voltage (V)	Pin Voltage (V) Note	Function and Application
1	V_{CC}	4.5 to 5.5	–	Power supply pin. This pin should be externally equipped with bypass capacitor to minimize ground impedance.
2	INPUT1	–	1.29	Signal input pins to AGC amplifier. This pin should be coupled with capacitor for DC cut.
3	INPUT2	–	1.29	
4	V_{AGC}	0 to V_{CC}	–	Gain control pin. This pin's bias govern the AGC output level. Minimum Gain at V_{AGC} : 0 to 0.5 V Maximum Gain at V_{AGC} : 3 to 3.5 V Recommended to use AGC voltage with externally resister (example: 1 kΩ).
5	GND2	0	–	Ground pin. This pin should be connected to system ground with minimum inductance. Ground pattern on the board should be formed as wide as possible.
6	OUTPUT2	–	2.28	Signal output pins of video amplifier. This pin should be coupled with capacitor for DC cut.
7	OUTPUT1	–	2.28	
8	GND1	0	–	Ground pin. This pin should be connected to system ground with minimum inductance. Ground pattern on the board should be formed as wide as possible. All ground pins must be connected together with wide ground pattern to decrease impedance difference.

Note : Pin voltage is measured at V_{CC} = 5.0 V.

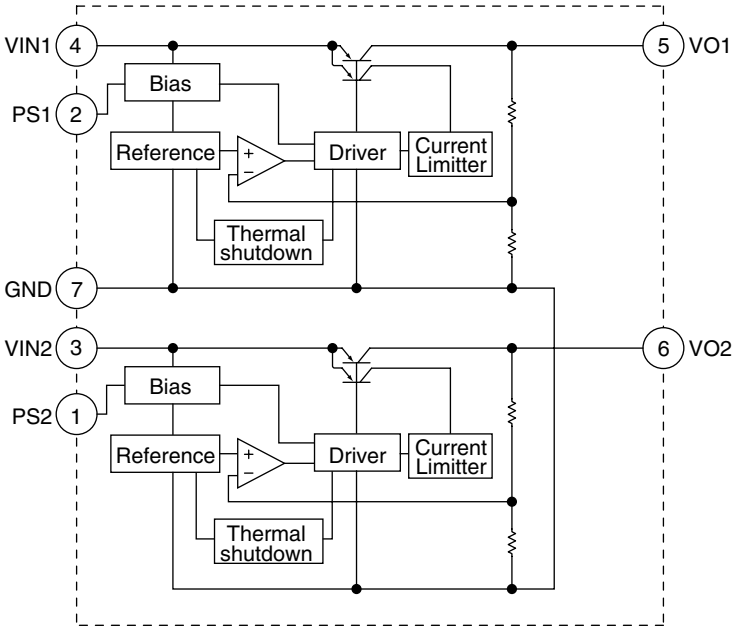
■ MM1689FH (DTBR ASSY : IC307)

• Dual Regulator

● Pin Arrangement (Top view)



● Block Diagram



● Pin Function

No.	Pin Name	Pin Function
1	PS2	ON/OFF Control pin Cont: H = On, L = OFF Cont pin must be connected with Vin pin, if it is not used.
2	PS1	ON/OFF Control pin
3	VIN2	Input pin The capacitor is required to connect with input pin more than 1 μ F.
4	VIN1	Input pin
5	VOUT1	Output pin The capacitor must be connected with output pin more than 1 μ F.
6	VOUT2	Output pin
7	GND	Ground
8	NC	No connection

7.3 CAUTIONS ON HANDLING THE HDD

(1) Cautions on Handling the HDD

- The HDD is very sensitive to shocks and vibrations. Care must be taken especially during operation (when the power is on).
- The HDD is very sensitive to electrostatic charges.
- Rapid change in temperature or humidity may cause deterioration of the HDD.

Note: After receiving damage caused by any above-mentioned factors, the HDD may operate normally for dozens or some hundreds of hours but then suddenly crash. If you are certain you have damaged a new repair part (HDD) while making repairs, do not use the part.

The HDD is about 10 times as sensitive to shock during operation than during nonoperation.

Reference: Main specifications on damage to the HDD

	During operation	During nonoperation
Shock G (acceleration)	<approx. 20 G	<approx. 200 G
Temperature change	< 15°C/hour	
Moisture change	< 20%/hour	

Reference: Estimate value of falling distance vs. shock (G) when the HDD is dropped without protection

Falling distance \ Landing surface	Granite surface	Concrete floor	Synthetic-resin-coated table	Antistatic sponge
0.5 inch / 12.7 mm	387	217	200	26
1.0 inch / 25.4 mm	595	457	310	37
2.0 inch / 50.8 mm	1133	600	680	70
4.0 inch / 101.6 mm	1795	1040	1050	267

(2) Cautions on handling the product on which the HDD is mounted or the HDD as a repair part, and examples of dangerous handling

[Cautions on handling the product on which the HDD is mounted]

- While the unit is turned on, the HDD is always in operation. Be sure NOT to impart shock to the unit.

● Examples of dangerous handling: while the power is on

- Bumping on the bonnet
- Dropping an object, such as a small screwdriver or remote control unit, onto the bonnet, or bumping an object against the cabinet
- Moving the unit by dragging
- Stacking another product on the unit

Note: Be sure NOT to impart shock, such as bumping or hitting a screwdriver against the HDD, during diagnosis with the bonnet open.

● Examples of dangerous handling: while the power is off

- Imparting strong shock, although the HDD is more resistant to shock when the power is off
- Dropping the unit from a height of several centimeters, or after lifting one side of the unit up, then letting the unit drop.

- Do NOT move the unit immediately after the power is turned off. Wait at least 30 seconds after the indication on the FL display changed from POWER OFF to the clock indication before moving the unit.
  If the AC power cord is accidentally disconnected before turning the unit off, wait at least for one minute before moving it. In this case, damage to the HDD caused by sudden shutoff may be small, because the emergency relief mechanism is activated. However, if sudden shutoff occurrs during recording or playback, recorded data may be damaged. Be sure to check operations.

[Cautions on handling the HDD as a repair part]

1. Handle the HDD in a safe environment:
   - Handle the HDD over an antistatic pad that can also absorb shock.
   - Wear wrist bands to prevent electrostatic charges generated in your body from affecting the HDD.

2. The following must be observed when handling the HDD:
   - Handle one HDD at a time. Do NOT hold several HDDs at the same time.
   - Grip the HDD on both sides so that you do not touch its terminals or circuit boards.
   - Do NOT stack one HDD onto another HDD (even if the HDDs are protected in antistatic bags).
   - Do NOT bump the HDDs against one another.
   - Do NOT bump any tool, such as a screwdriver, or other hard object against the HDD.
   - When a repair part (HDD) is transported and there is a large temperature difference between outdoors and indoors, to the indoor, leave it in its package for about a half day to gradually cool or warm the HDD to room temperature before unpacking it.

[Notes on packing for shipment]

- When returning a defective HDD for analysis, handle with care as if it were a good product. Otherwise, the results of analysis may not be correct.
- When packing, use the antistatic bag and packing materials in which the repair part for service was delivered. Attach a copy of the slip for service or a memo stating symptoms in as much detail as possible.

■ Outline and part No. of the HDDs

*Pioneer's part No. is not stamped.

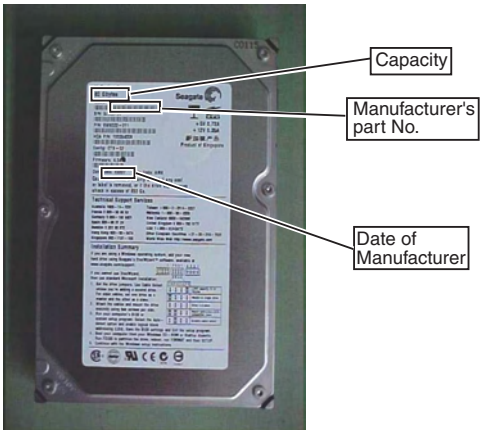
Model Name	Capacity	Western Digital		SEAGATE	
		Pioneer's Part No. (for service)	Manufacture's Part No.	Pioneer's Part No. (for service)	Manufacture's Part No.
DVR-440HX-S	80GB	VXF1066	WD800BB -xxJKCx	VXF1084	ST380012ACE
DVR-540HX-S	160GB	VXF1068	WD1600BB -xxGUCx	VXF1086	ST3160022ACE

- When replacing the HDD, carefully check the capacity and manufacturer's part No. on the part label to avoid replacing with a similar but inappropriate product. You can also check the model No. of the mounted HDD on the Service mode screen.
- Do NOT use repair parts, such as commercially available HDDs, other than those designated above, as their functions, performance or reliability cannot be guaranteed.

Western Digital(80GB)

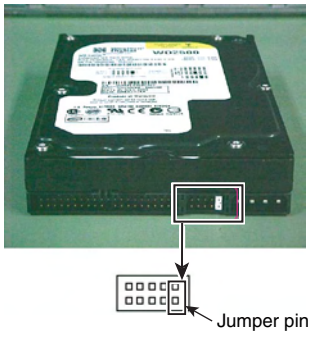
Western Digital(160GB)

Seagate(80G,160G)



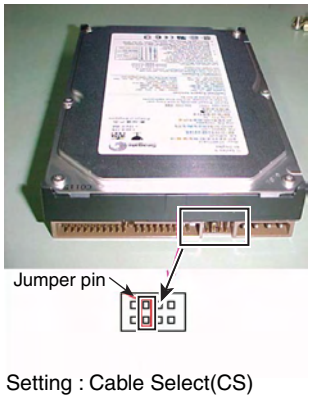
■ Confirmation of the jumper pin location of the HDD

Western Digital



Setting : Cable Select(CS)

Seagate



Setting : Cable Select(CS)

7.4 DISC/CONTENT FORMAT

	HDD	DVD-R		DVD-RW		DVD+R	DVD +RW	DVD-RAM
Marks used in this manual	HDD	DVD (VR) *1	DVD (Video)	DVD (VR) *1	DVD (Video) *2	DVD+R	DVD+RW	DVD-RAM *13, 16
Logos	HDD HARD DISK DRIVE	DVD R		DVD RW	DVD RW RW 2	RW DVD+R	RW DVD+ReWritable RW DVD+ReWritable	DVD RAM
Re-recordable / Erasable	●	● *3	● *3	●	●	*3	● *14	●
Editing of recorded programs	●	●	● *4	●	● *4	● *4	● *4	●
Recording of Copy-once protected material	●	● *12		● *12				● *12
Playback in other players/recorders	*n/a*	*5	● *6	● *7	● *6	● *6, 15	● *8	● *9
Chase play	●							
16:9 and 4:3 program recording	●	●		●				●
Bilingual broadcast recording of both audio channels	● *10, 11	● *11		● *11				● *11

Notes to table

**1 Must be initialized for VR mode recording*
**2 Must be initialized for Video mode recording*
**3 Erasable, but free space does not increase*
**4 Cannot erase sections, edit chapters or use playlist editing*
**5 Must be compatible with DVD-R(VR) playback*
**6 Finalize using this recorder (may not playback in some units)*
**7 Must be compatible with DVD-RW(VR) playback*
**8 Must be compatible with DVD+RW playback*
**9 Must be compatible with DVD-RAM playback*
**10 Only when HDD Recording Format is set to Video Mode Off*
**11 Only when the recording mode is not set to LPCM*
**12 CPRM-compatible discs only*
**13 Take the disc out of the cartridge before use. Only Matsushita and Maxell discs have been tested to work reliably with this recorder. Discs from other makers may become unusable when recorded or edited.*
**14 Erasing a title does not increase the available recording time, nor increase the number of recordable titles left.*
**15 Must be compatible with DVD+R playback*
**16 Depending on the disc, it may have to be initialized before it can be recorded. In this case, initialization will take about 1 hour.*

DVD is a trademark of DVD Format/Logo Licensing Corporation.

Using DVD-R DL/DVD+R DL discs

DVD-R DL (dual-layer) and DVD+R DL (double-layer) discs contain two recordable layers on a single side, giving about 1.8 times the recording capacity of a conventional single-layer disc. This unit can record to both DVD-R DL and DVD+R DL discs.

- If you intend to play DVD-R DL (Video mode) or DVD+R DL discs recorded on this unit on other DVD recorders/players, you must finalize them. (Note that some DVD recorders/players may not play even finalized DL discs.)
- Please read the information provided on the disc packaging carefully before purchasing DVD-R DL/DVD+R DL discs:
- *Confirm the disc version:* Use ver. 3.0 / 2 x to 4 x DVD-R discs.
- *Confirm the recording speed :* DVD-R should be compatible with 2 x or 4 x recording; DVD+R with 2.4 x to 8 x recording.
- This logo indicates that the disc is a DVD-R DL or DVD+R DL disc:

DVD R DL 4X/2X RW DVD+R DL

- Correct operation has been confirmed for DVD-R DL discs (Ver. 3.0 / 2 x, 4 x) produced by the following manufacturers: Mitsubishi Kagaku Media, Verbatim (as of March 2005).

About DualDisc playback

A DualDisc is a new two -sided disc, one side of which contains DVD content -video, audio, etc. -while the other side contains non-DVD content such as digital audio material.

The non-DVD, audio side of the disc is not compliant with the CD Audio specification and therefore may not play.

It is possible that when loading or ejecting a DualDisc, the opposite side to that being played will be scratched. Scratched discs may not be playable.

The DVD side of a DualDisc plays in this product. DVD-Audio content will not play.

For more detailed information on the DualDisc specification, please refer to the disc manufacturer or disc retailer.

Other disc compatibility

In addition to DVD, this recorder is compatible with a wide range of disc types (media) and formats. Playable discs will generally feature one of the following logos on the disc and/or disc packaging. Note however that some disc types, such as recordable CD (and DVD), may be in an unplayable format - see below for further compatibility information.

CD-R/RW compatibility

This recorder cannot record CD-R or CD-RW discs.

- Readable formats: CD-Audio, Video CD/ Super VCD, ISO 9660 CD-ROM* containing MP3, WMA, JPEG or DivX files.
  * *ISO 9660 Level 1 or 2 compliant. CD physical format: Mode1, Mode2 XA Form1. Romeo and Joliet file systems are both compatible with this recorder.*
- Multi-session playback: Yes (except CD-Audio and Video CD/Super VCD)
- Unfinalized disc playback: CD-Audio only

Compressed audio compatibility

- Compatible media: CD-ROM, CD-R, CD-RW
- Compatible formats: MPEG-1 Audio Layer 3 (MP3), Windows Media Audio (WMA)
- Sampling rates: 32 kHz, 44.1 kHz or 48 kHz
- Bit-rates: Any (128 Kbps or higher recommended)
- Variable bit-rate (VBR) MP3 playback:Yes
- VBR WMA playback: No
- WMA encoder compatibility: Windows Media Codec 8*(files encoded using Windows Media Codec 9 may be playable but some parts of the specification are not supported; specifically, Pro, Lossless, Voice and VBR)*
- DRM (Digital Rights Management)[1] file playback: No
- File extensions: .mp3, .wma (these must be used for the recorder to recognize MP3 and WMA files - do not use for other file types)
- File structure: Up to 99 folders / 999 files (if these limits are exceeded, only files and folders up to these limits are playable)

WMA (Windows Media Audio) compatibility

The Windows Media® logo printed on the box indicates that this recorder can playback Windows Media Audio content.

WMA is an acronym for Windows Media Audio and refers to an audio compression technology developed by Microsoft Corporation. WMA content can be encoded by using Windows Media® Player for Windows® XP, Windows Media® Player 9 or Windows Media® Player 10 series.

Microsoft, Windows Media, and the Windows logo are trademarks, or registered trademarks of Microsoft Corporation in the United States and/or other countries.

DivX video compatibility

DivX is a compressed digital video format created by the DivX® video codec from DivX, Inc. This recorder can play DivX video files burned on CD-R/RW/ROM discs. Keeping the same terminology as DVD-Video, individual DivX video files are called "Titles." When naming files/titles on a CD-R/RW disc prior to burning, keep in mind that by default they will be played in alphabetical order.

- Official DivX® Certified product.
- Plays all versions of DivX® video (including DivX® 6) with standard playback of DivX® media files.
- File extensions: .avi and .divx (these must be used for the recorder to recognize DivX video files). *Note that all files with the .avi extension are recognized as MPEG4, but not all of these are necessarily DivX video files and therefore may not be playable on this recorder.*
- File structure: Up to 99 folders or 999 files.

DivX, DivX Certified, and associated logos are trademarks of DivX, Inc. and are used under license.

DivX® VOD content

DivX

In order to play DivX VOD (video on demand)

Note

1 DRM (digital rights management) copy protection is a technology designed to prevent unauthorized copying by restricting playback, etc. of compressed audio files on devices other the PC (or other recording equipment) used to record it. For detailed information, please see the instruction manuals or help files that came with your PC (or other WMA recording equipment) and/or software.

content on this recorder, you first need to register the recorder with your DivX VOD content provider. You do this by generating a DivX VOD registration code, which you submit to your provider.

Some DivX VOD content may only be playable a fixed number of times. When you load a disc containing this type of DivX VOD content, the remaining number of plays is shown on-screen and you then have the option of playing the disc (thereby using up one of the remaining plays), or stopping. If you load a disc that contains expired DivX VOD content (for example, content that has zero remaining plays), the message **Rental Expired** is displayed.

If your DivX VOD content allows an unlimited number of plays, then you may load the disc into your recorder and play the content as often as you like, and no message will be displayed.

Important

- DivX VOD content is protected by a DRM (Digital Rights Management) system. This restricts playback of content to specific, registered devices.
- If you load a disc that contains DivX VOD content not authorized for this recorder, the message **Authorization Error** is displayed and the content will not play.
- Resetting the recorder will not cause you to lose your registration code.

JPEG file compatibility

- Compatible formats: Baseline JPEG and EXIF 2.2* still image files
  * *File format used by digital still cameras*
- Sampling ratio: 4:4:4, 4:2:2, 4:2:0
- Horizontal resolution: 160 to 5120 pixels
- Vertical resolution: 120 to 3840 pixels
- Progressive JPEG compatible: No
- File extensions: .jpg, .jpeg, .jpe, .jif, .jfif (must be used for the recorder to recognize JPEG files - do not use for other file types)
- File structure: The recorder can load up to 99 folders / 999 files at one time*(if there are more files/folders that this on the disc then more can be reloaded)*

PC-created disc compatibility

Discs recorded using a personal computer may not be playable in this unit due to the setting of the application software used to create the disc. In these particular instances, check with the software publisher for more detailed information.

Discs recorded in packet write mode (UDF format) are not compatible with this recorder.

Check the DVD-R/RW or CD-R/RW software disc boxes for additional compatibility information.

Dolby Digital

Manufactured under license from Dolby Laboratories. "Dolby" and the double-D symbol are trademarks of Dolby Laboratories.

DTS

"DTS" and "DTS Digital Out" are registered trademarks of Digital Theater Systems, Inc.

DVB

DVB for short, is a set of open standards for digital broadcasting, covering terrestrial, cable and satellite broadcasts.

Based around the MPEG-2 coding system, these open standards ensure that compliant systems are able to work together, independent of manufacturer.

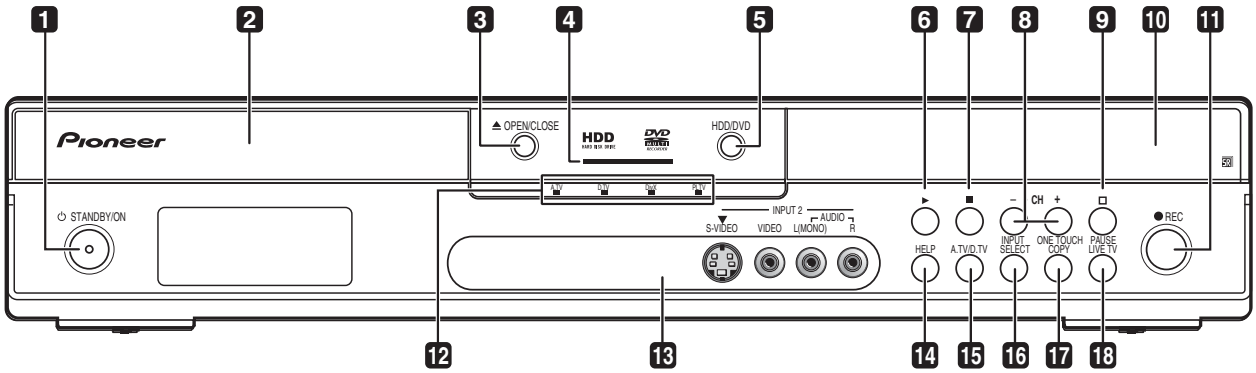
DVB is extremely flexible, being able to deliver virtually any kind of digital content to the home, including High Definition and Standard Definition TV, broadband multimedia content and interactive services.

DVB is a registered trademark of the DVB Project.

8. PANEL FACILITIES

8.1 FRONT PANEL

● Front panel



1 ⏻ STANDBY/ON
Press to switch the recorder on/into standby.

2 Disc tray

3 ⏏ OPEN/CLOSE
Press to open/close the disc tray.

4 HDD / DVD indicators
Indicator lights blue when the hard disk (HDD) is selected; orange when the DVD drive is selected.

5 HDD/DVD
Press to switch between HDD and DVD for recording and playback.

6 ►
Press to start or restart playback.

7 ■
Press to stop playback.

8 CH +/–
Use to change channels, skip chapters/tracks, etc.

9 □ (STOP REC)
Press to stop recording.

10 Front panel display and IR remote sensor

11 ● REC
Press to start recording. Press repeatedly to set the recording time in 30 minute blocks.

12 A.TV indicator
Lights when analog TV is selected.

D.TV indicator
Lights when digital TV is selected.

DivX indicator
Lights during DivX playback.

PLTV indicator
Lights during recording started using the Pause Live TV feature.

13 Front panel inputs
Audio/video input (stereo analog audio; composite and S-Video video), especially suitable for camcorders, game consoles, portable audio, etc.

14 HELP
Press for help on how to use the current GUI screen.

15 A.TV / D.TV
Switches between analog TV antenna input and digital TV antenna input. The **A.TV** and **D.TV** indicators show which is selected.

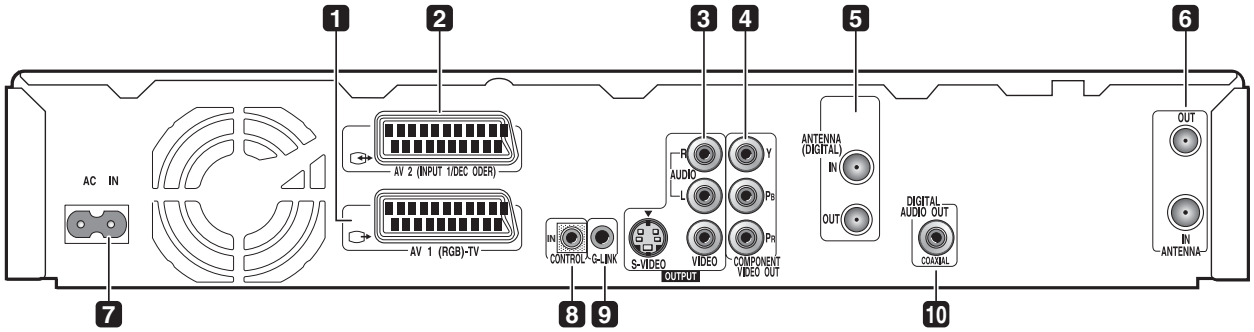
16 INPUT SELECT
Press to change the input to use for recording.

17 ONE TOUCH COPY
Press to start One Touch Copy of the currently playing title to DVD or the HDD.

18 PAUSE LIVE TV
Press to start recording the current TV channel, but with playback paused, effectively pausing the broadcast.

8.2 REAR PANEL

● Rear panel



1 AV1(RGB)-TV AV connector
Audio/video output SCART-type AV connector for connecting to a TV or other equipment with a SCART connector. The video output is switchable between video, S-Video and RGB.

2 AV2(INPUT 1/DECODER) AV connector
Audio/video input/output SCART-type AV connector for connecting to a VCR, or other equipment with a SCART connector. The input accepts video, S-Video and RGB.

3 OUTPUT
Stereo analog audio, video and S-Video outputs for connection to a TV or AV amplifier/receiver.

4 COMPONENT VIDEO OUT
A high-quality video output for connecting to a TV or monitor with a component video input.

5 ANTENNA (DIGITAL) IN/OUT
Connect your DTV antenna to the **ANTENNA (DIGITAL) IN** jack. The signal is passed through to the **ANTENNA (DIGITAL) OUT** jack for connection to your TV.

6 ANTENNA IN (RF IN)/OUT
Connect your TV antenna to the **ANTENNA (RF IN)** jack. The signal is passed through to the **ANTENNA OUT** jack for connection to your TV.

7 AC IN – Power inlet

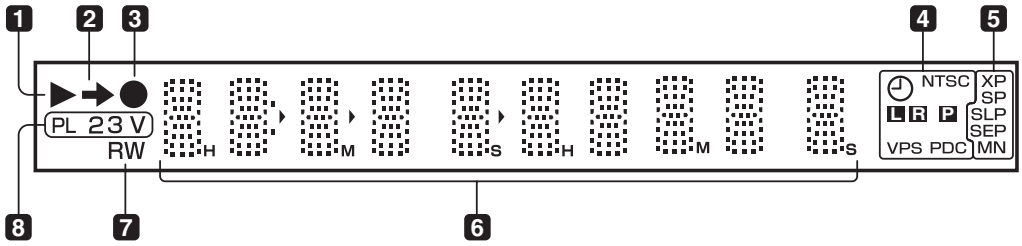
8 CONTROL IN
Use to control this recorder from the remote sensor of another Pioneer component with a **CONTROL OUT** terminal and bearing the Pioneer mark.
Connect the **CONTROL OUT** of the other component to the **CONTROL IN** of this recorder using a mini-plug cord.

9 G-LINK™
Use to connect the supplied G-LINK™ cable to enable GUIDE Plus+™ to control an external satellite receiver, etc.

10 DIGITAL AUDIO OUT
Coaxial digital audio jack for connecting to an AV amplifier /receiver, Dolby Digital/DTS/MPEG decoder or other equipment with a digital input.

8.3 DISPLAY

● Display



1 ►
Lights during playback; blinks when playback is paused.

2 →
Lights when copying.

3 ●
Lights during recording; blinks when recording is paused.

4 ⏲
Lights when a timer recording has been set. (Indicator blinks if the timer has been set to DVD but there isn't a recordable disc loaded, or the timer has been set to HDD but the HDD is not recordable.)

NTSC
Lights when the video output signal format is NTSC.

L R
Indicates which channels of a bilingual broadcast are recorded.

P
Lights when the component video output is set to progressive scan.

VPS / PDC
Lights when receiving a VPS/PDC broadcast during a VPS/PDC-enabled timer recording.

5 Recording quality indicators

XP
Lights when the recording mode is set to **XP** (best quality).

SP
Lights when the recording mode is set to **SP** (standard play).

LP / SLP
Lights when the recording mode is set to **LP** (long play) or **SLP** (super-long play).

EP / SEP
Lights when the recording mode is set to **EP** (extended play) or **SEP** (super-extended play).

MN
Lights when the recording mode is set to **MN** (manual recording level) mode.

6 Character display

7 R / RW
Lights when a recordable DVD-R or DVD-RW disc is loaded.

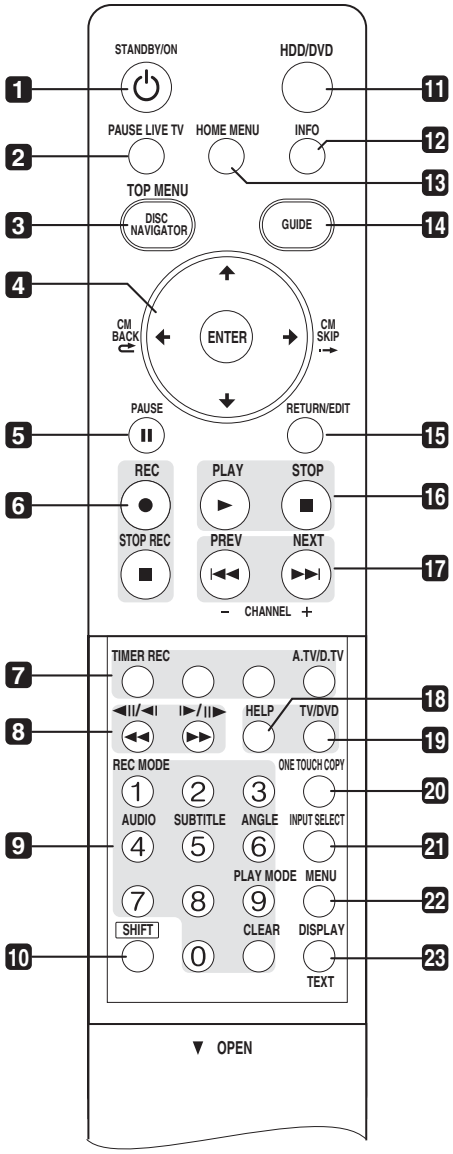
8 PL
Lights when a VR mode disc is loaded and the recorder is in Play List mode.

23
Shows the remote control mode (if nothing is displayed, the remote control mode is 1).

V
Lights when an unfinalized Video mode disc is loaded.

8.4 REMOTE CONTROL

● Remote control



1 ⏻ STANDBY/ON
Press to switch the recorder on/into standby.

2 PAUSE LIVE TV
Press to start recording the current TV channel, but with playback paused, effectively pausing the broadcast.

3 DISC NAVIGATOR / TOP MENU
Press to display the Disc Navigator screen, or the top menu if a DVD-Video or finalized DVD-R/-RW (Video) disc is loaded.

4 ↑/↓/←/→ and ENTER
Used to navigate all on-screen displays. Press **ENTER** to select the currently highlighted option. While watching D.TV press **ENTER** to display the Channel List screen.

CM BACK (commercial back)
Press repeatedly to skip progressively backward through the audio or video playing.

CM SKIP (commercial skip)
Press repeatedly to skip progressively forward through the audio or video playing.

5 ⏸PAUSE
Press to pause playback or recording.

6 Recording controls
● REC
Press to start recording. Press repeatedly to set the recording time in blocks of 30 mins. When the red action button is visible in a GUIDE Plus+™ screen, use for One-Button-Record.

□ STOP REC
Press to stop recording.

7 Colour buttons
(RED, GREEN, YELLOW, BLUE)
Use when an EPG screen is displayed or when tuned to a data channel of a digital broadcast. The function of each button will be described on-screen, and changes depending on the screen being displayed.

TIMER REC
Hold **SHIFT** and press to set a timer recording from the GUIDE Plus+™ system.

A.TV / D.TV
Hold **SHIFT** and press to switch between analog TV antenna input and digital TV antenna input. The **A.TV** and **D.TV** indicators on the front panel show which is selected.

8 ◄◄ ►►
Press to start reverse or forward scanning. Press again to change the speed.

◄⏸/◄I I►/⏸►
While paused, press and hold to start slow-motion playback. Press repeatedly to change the playback speed.
While paused, press to advance a single frame in either direction.
When GUIDE Plus+™ is displayed, use to display the previous/next day.

9 Number buttons, CLEAR
Use the number buttons for track/chapter/title selection; channel selection, and so on. The same buttons can also be used to enter names for titles, discs and so on. Use **CLEAR** to clear an entry and start again.

REC MODE
Hold **SHIFT** and press repeatedly to change the recording mode (picture quality).

AUDIO
Hold **SHIFT** and press to change the audio language or channel. (When the recorder is stopped, press to change the tuner audio.)

SUBTITLE
Hold **SHIFT** and press to display/change the subtitles included in multilingual DVD-Video discs.
While watching D.TV, press to change the D.TV subtitles.

ANGLE
Hold **SHIFT** and press to switch camera angles on discs with multi-angle scenes.

PLAY MODE
Hold **SHIFT** and press to change the play mode (search, repeat, program play, etc.).

10 SHIFT
Use to access functions on the remote printed in green.

11 HDD/DVD
Press to select the hard disk (HDD) or DVD for recording and playback.

12 INFO
While watching D.TV, press to display the information banner.
Press to see additional information for the highlighted item in the EPG.

13 HOME MENU
Press to display the Home Menu, from which you can navigate all the functions of the recorder.

14 GUIDE
Press to display the EPG screen; press again to exit.

15 RETURN/EXIT
Press to go back one level in the on-screen menu or display.
Also press to exit the MHEG application.

16 ►PLAY
Press to start playback.

■STOP
Press to stop playback.

17 CHANNEL +/–
Press to change the channel of the built-in TV tuner.

I◄◄ PREV ►►I NEXT
Press to skip to the previous or next title/chapter/track/folder; or to display the previous or next menu page.
When GUIDE Plus™ is displayed, use to display the previous/next page.

18 HELP
Press for help on how to use the current GUI screen.

19 TV/DVD
Press to switch between "TV mode", in which you get the picture and sound from the TV's tuner, and "DVD mode", in which you get picture and sound from the recorder's tuner (or an external input).

20 ONE TOUCH COPY
Press to start One Touch Copy of the currently playing title to DVD or the HDD.

21 INPUT SELECT
Press to change the input to use for recording.

22 MENU
Press to display the disc menu if a DVD-Video, finalized DVD-R/-RW or finalized DVD+R/+RW disc is loaded.
When in the GUIDE Plus+™ system, use to jump directly to the Menu bar.

23 DISPLAY
Displays/changes the on-screen information displays.

TEXT
Hold **SHIFT** and press to start the MHEG application display, if available, while watching a digital channel (UK only).

■ Jigs list

Name	Jig No.	Remarks
Service Remote Control Unit	GGF1381	Adjustment, diagnosis
DVD Test Disc (DVD-Video)	GGV1025	Check of DVD-Video
DVD Recorder Data Disc Type2	———— (*)	Diagnosis (ID data setting)
Extension Board	GGF1533(A)/GGF1533(B)	Diagnosis of DTBR Assy
Extension Cable (28P)	GGD1437	Diagnosis of DTBR Assy
4P Power Cable	VKP2291	Extension of HDD
Jig for LD Power Adjustment	GGF1559	LD Power Adjustment
FFC Cable (10P)	GGD1477	LD Power Adjustment
CD-ROM Test Disc	GGV1054	LD Power Adjustment
DVD Dual Layer Test Disc	GGV1036	LD Power Adjustment

(*) Be sure to use the latest disc (Type 2).
In May, 2006, the latest disc is GGV1273.

■ Lubricants and Glues list

Name	Lubricants and Glues No.	Remarks
Hanarl	GEM1041	refer to "2.4 FRONT PANEL SECTION"

Before shipping out the product, be sure to clean the following positions by using the prescribed cleaning tools:

Position to be cleaned	Cleaning tools
Pickup lenses	Cleaning liquid : GEM1004 Cleaning paper : GED-008

Position to be cleaned	Cleaning tools
Fans	Cleaning paper : GED-008